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Railway Age

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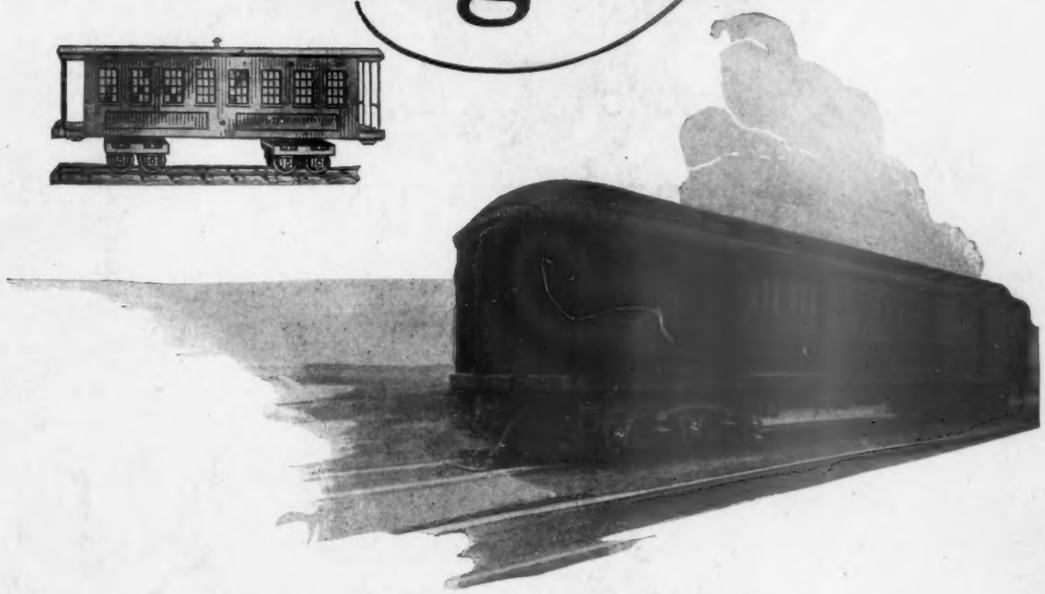

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EDITORIAL

Railway Age

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Telephone Train Dispatching Progress

Telephone train dispatching apparatus was installed on 5,067 miles of road in the United States during 1922, according to a report of the Interstate Commerce Commission. The trains on approximately 52 per cent of the mileage operated in this country are dispatched by telegraph and those on approximately 52 per cent by telephone, the overlap in these percentages being due to the fact that both means of communication are used for dispatching on some divisions. Practically all of the longer installations made during 1922 were on roads which have learned from experience to appreciate the advantages of telephone train dispatching. The Chicago, Burlington & Quincy, one of the first roads to use the telephone for train dispatching, added 356 miles last year to its 3,893 miles, and the Pere Marquette installed 355 miles in 1922, a large installation for a road of its size. While the total mileage of telephone train dispatching circuits added last year is about four times greater than that built during 1921 it represents only about 4 per cent of the mileage not now equipped with telephones. In other words, at the rate of installation in 1922 it would require 25 years to equip the remaining miles with telephone train dispatching. This indicates that many roads have not yet appreciated the value of modernizing their communication facilities and that they have not realized the aid which the telephone offers in securing information directly from train crews regarding the location of trains, delays, accidents, etc., as well as expediting the dispatching work itself. These advantages are worth investigation at this time when the reduction of operating costs and the increasing of track capacity at a minimum of expenditure are problems challenging solution on almost every railroad.

The Transverse Fissure—An Unsolved Problem

No phase of track maintenance presents a graver aspect than the problem of the transverse fissure on rails. Although 12 years have passed since this phenomenon was definitely identified, and in spite of its subsequent duplication in many thousands of instances, often resulting in serious train accidents, we seem no closer to a solution now than at any time since the first fissure was discovered. Many reports have been issued pointing to this or that indication of certain relationships which might afford some clue to the cause, but so far, no definite cure has been prescribed. The report by James E. Howard, engineer-physicist of the Interstate Commerce Commission, abstracted elsewhere in this issue, presents a general review of the subject based on his own investigations and a study of those conducted by others. Mr. Howard's report is definite as to one point. It reiterates the conclusion appearing in his previous reports, namely, that fissures are primarily the result of the cold rolling of the metal in the running surface of the rail produced by the wheels of railway equipment. Beyond this, his findings are largely negative in that he eliminates in turn all of the theories advanced by others for the appearance of this perplexing phenomenon in rail failures. Data are presented to show that the appearance of the fissure is practically independent of all variables except traffic density, failures occurring in greater volume on the lines of heaviest traffic. Even the influence of girder strength of the rails, a point raised by those who suggest the use of heavier sections than those now used, is seriously questioned except as attention may be directed to the wisdom of avoiding excessive bending strains in the rails. But, in ascribing the transverse fissure to the effect of cold rolling, Mr. Howard fails to offer any specific cure other than to recommend further study of the subject. There is, however, one thought in his conclusions which should be taken to heart by the railways and the manufacturers, namely, the need for a closer co-operation between the two in their efforts to overcome this grave malady of the railway track structure. It is to be hoped that greater progress toward a solution will be made in the next few years than has been made in the last twelve.

The "Eat More Wheat" Campaign

The price of wheat presents a national problem of importance. The wheat crop constituted less than 7 per cent of the total value of the farm products of the United States last year. It happens, however, that a large proportion of the farmers of certain western states depend almost exclusively on wheat-growing for their income. The price of wheat has been low compared with the prices of most commodities and services and the wages of labor for over two years. Recently it has declined to such a low point that the wheat farmers are suffering severely. The more intelligent of them know this is because too much wheat has been produced, but the low price has been and is causing discontent among hundreds of thousands of farmers in wide areas that is a positive menace to the welfare of the nation. The entire political and economic situation of the country would be greatly improved if the price of wheat could be made higher compared with the prices of other things. It would be far better, if it were practicable, and probably it would be more practicable, to raise the price of wheat than to reduce the prices of all other things. Many radicals in the west are advocating a subsidy by the federal government to raise the price of wheat to $1.75 a bushel. The National Wheat Council has suggested a wholly different method of increasing the price of wheat. It has adopted the slogan "Eat More Wheat." It has been calculated that if each person in the country should eat one slice or two ounces more of wheat bread at each meal the increase in the consumption of wheat would be 170 million bushels annually which is equivalent to the average exportable surplus of wheat grown in the United States during the last 20 years. An "Eat More Wheat" campaign cannot possibly do any harm. To whatever extent it increases the demand for and raises the price of wheat it will tend to solve one of the most perplexing and dangerous economic and political problems immediately confronting the country. The railways ought to help in every way possible in carrying on the "Eat More Wheat" campaign. The Louisville & Nashville has printed this slogan in black type at the bottom of its menu cards and other railroads might well do likewise. The railways throughout the country might well go further and put up this slogan on bulletins in their railway stations. There is

a widespread demand for a reduction in the freight rates on wheat. Most of the railways in the wheat-growing states are suffering severely from poor earnings and would be seriously injured by reductions of their freight rates. The wheat farmers would be benefited far more by a small increase in the price of wheat than by any reduction of rates that the railways serving them could make without disastrous results. The "Eat More Wheat" campaign is one which the railways may well help energetically to carry on.

Reducing Transportation Expense

Real savings by the railroads, as contrasted with reduced maintenance and other deferred expenditures, can be effected only by the addition of labor saving machinery or facilities and by improvements in method. Additional machinery and other facilities cost money. Better methods cost little or nothing. There is a limit to the improvement which can be brought about by better methods in turning out work which requires a high ratio of physical exertion in its accomplishment. In the transportation department, however, the work of most employees is of such a nature that the output of ton-miles per employee is not curtailed by the fact that a large proportion of the force is exerting itself to the limit either of its physical endurance or of its will to work. The ratio of transportation expense at the present time is, moreover, relatively high when compared with past performance. It is in transportation expense, therefore, where the greatest savings can be made without greatly increased outlay and in comparatively short periods of time. Stanton Ennes, in an article appearing elsewhere in this issue, subscribes to this view and then proceeds to outline a number of improvements in the method of conducting transportation which should bring improvements in efficiency. He makes the point that such savings will probably be absolutely necessary because "a raid on rates is the least of the punishment threatened" by the next Congress. Whether or not the outlook for the railroads is really as dark as that, improved efficiency in conducting transportation is highly desirable and Mr. Ennes' article analyzes the problem thoroughly and suggests several methods for solving it, including the scheduling of freight trains, systematizing work at yards and terminals, the extension of cost accounting and a revival of interest in methods which have proved highly successful in the past. It might be added that the subject which Mr. Ennes discusses is of the greatest importance at the present time not only because of its immediate bearing on net earnings but also because it includes the only possible solution for handling with a minimum of congestion and delay the heavy fall traffic now in prospect.

Ten Crossing Tragedies on One Sunday

Requiring every automobile driver to bring his car to a stop before crossing a railroad track is, admittedly, a crude regulation; and, as in the case of all crude regulations embodied in statutes, enforcement is attended by varied difficulties. Already the Federal Bureau of Public Roads calls attention to the fact that laws like those of Virginia, Tennessee and North Carolina, fit some situations very badly; as, for example a crossing where the number of railroad trains is perhaps two a day, while the automobiles on the highway are numbered by the hundreds. It is reported that the bureau disapproves of state legislation like that in the states named; the railroad trains ought to be stopped instead of the automobiles. There are, of course, cases where this would be the proper remedy. But, as was suggested in our note on this subject on July 28, the present need is agitation. It is probable that vigorous action looking to enforcement of the present laws will be the best way to secure such modification as may be found feasible and desirable. Changing the statutes is slow business. Whatever the deficiencies of the statute, every driver is bound, under the common law, to observe the rule at places where it is necessary and reasonable, even if there be a hundred cases where a jury would exonerate him in case he disobeyed it. The trouble is that so large a number (though perhaps a small percentage of all drivers) prefer to have no law at all. These must be awakened, in some way, unless all trains are to be brought down to 10 miles an hour. The present slaughtering cannot go on indefinitely. The number killed in automobiles on crossings in the United States last Sunday was *thirty-six*, as noted in another column. Every responsible public officer in each of the nine states reporting these tragedies is bound to take cognizance of the whole list. Moreover, railroad officers, as the best informed citizens, have a serious duty as agitators. Our legislators are, as yet, only half awake.

The Oil Situation

It would not readily appear that people interested in the railway situation should feel it necessary to pay particular heed to the discussion which is being conducted concerning the difficulties of the oil producers and refiners in the mid-continent oil field. It seems that the exploitation of the newly developed Huntington Beach, Long Beach and Santa Fe Springs fields in southern California has completely upset all calculations relative to the oil situation. The development of these fields —still continuing at a rapid rate—has been such that in May, 1923, California produced double the amount of gasoline that it produced in May, 1922. It is producing this gasoline at a low cost combined with which the shipping charges for transportation in tankers through the Panama Canal are so favorable that the product can be supplied to the eastern section of the United States at a lower total cost than can be met by the producers in the mid-continent field, meeting slightly higher production costs and paying slightly higher freight rates for tank car movement to eastern points than is charged for the movement from California in tank vessels. At the same time the mid-continent field has had a very satisfactory development of its own, such at least that its gasoline production in May was estimated to be 23 per cent in excess of that in May a year ago. The mid-continent producers as a result have a record breaking stock of gasoline and they are now talking of shutting down their refineries or curtailing production. Other fields have already taken some steps to the same end and on the whole the California production has proved disconcerting in several places. The reason that railroad men should be interested in this situation is because of the large percentage which refined petroleum and its products constitutes of the total revenue tonnage of several of the southwestern roads. We do not understand that the rate structure is such that gasoline is an especially lucrative traffic but the business corollary to its production is of greatest importance to the railways serving the oil territory. It is not to be expected that the southwestern roads would be affected as severely as the northwestern roads appear to be from the conditions which have given us dollar wheat, but they will be and in fact are being affected nevertheless. The larger part of the net income which permitted the Class I railroads to earn 6.33 per cent on their tentative valuation in May is being earned in the east and south. The western roads are not showing nearly as good results nor do they promise under the conditions surrounding oil and wheat, to show much better results in the immediate future.

Valuation or Government Ownership?

THERE IS A LAWYER in Chicago named Donald R. Richberg. He is attorney for certain railroad labor organizations. These labor organizations favor the Plumb plan of government ownership and employees' management of railroads. Mr. Richberg is also general counsel for the National Conference on Valuation which recently met and organized in Chicago in response to a call issued by Senator LaFollette.

In practically every address made at this "conference on valuation" government ownership was advocated. Its sessions were opened by Mayor Hylan, of New York, with a speech advocating government ownership. William J. Bryan, who began advocating government ownership at Madison Square Garden, New York, in 1905, also made an address in which he said, "I fear that the country will be forced to government ownership because private ownership will not endure." Granville S. McFarland, of Boston, made a speech advocating government ownership. Warren S. Stone, president of the Brotherhood of Locomotive Engineers, and also president of the Plumb Plan League, was elected chairman of the committee on Finance. Practically every man who accepted an invitation to the conference is an advocate of government ownership. Among those present were practically all the heads of the railroad labor organizations which favor the Plumb plan. Others who attended were ex-Governor Dunne, of Illinois, long an advocate of government ownership of railroads and municipal ownership of public utilities; Carl D. Thompson, secretary of the National Public Ownership League; Carl D. Vrooman, formerly assistant secretary of Agriculture and long an advocate of government ownership; E. W. Bemis and DeLos F. Wilcox, both "public utility experts" who spend a large part of their time making speeches in favor of government ownership of railroads and public utilities; Mrs. Glenn E. Plumb, widow of the author of the Plumb plan; Robert Morris Lovett, editor of *The New Republic,* a magazine which constantly advocates government ownership; R. F. Pettigrew, a former Populist senator from North Dakota who has been advocating government ownership ever since the days of Populism. We have carefully reviewed the list of names of those who participated in the conference and practically every one of them has publicly advocated government ownership of railroads.

Now comes Mr. Richberg, attorney for both the labor organizations that want the Plumb plan and the "National Conference on Valuation," and in a public statement and sharply rebukes the railway executives of the country because some of them have dared to imply that the valuation conference, consisting almost entirely of advocates of government ownership, is trying to use its activities regarding the question of valuation as a means of promoting the cause of government ownership.

Well, if all these advocates of government ownership who held a conference and formed an organization to fight for a reduction of the valuation of the railways are not trying thereby to promote government ownership, what are they trying to do? They solemnly asseverate that what they really are trying to do is to save the producers and shippers of the United States from the necessity of paying high freight rates. But why should the heads of the railroad labor organizations, and Mr. Richberg, and ex-Governor Dunne, and Mrs. Glenn E. Plumb, and Carl D. Thompson, and Robert Morris Lovett, and John F. Hylan be so greatly concerned about freight rates? They do not pay freight rates. Furthermore, the heads of the railway labor organizations and those they represent are profiting more by the present freight rates than all the other people of the United States combined. Railway employees took $942,000,000 more in wages out of the rates the public paid to the railways last year than they took out of the rates the public paid to the railways five years before. If the labor leaders are so anxious to bring about reductions in rates, why do they not propose a reduction of wages? There are various organizations of large shippers in the United States—for example, the National Industrial Traffic League, whose members ship a very large part of all the freight moved in the country. Curiously enough, however, none of these organizations composed of concerns that pay hundreds of millions of dollars annually in freight rates was or is represented in the conference.

Mr. Richberg must, we think, admit that it is at least a remarkable coincidence, that those he represents when he appears before the Interstate Commerce Commission to attack the valuation placed upon the railways by the commission consist almost wholly, not of people who pay freight rates, but of labor organizations that advocate the Plumb plan and of politicians and other persons almost every one of whom is an avowed advocate of government ownership. When people who agree in ardently favoring one policy get together and form themselves into an organization to advocate some other policy, it is at least not unreasonable to surmise they have not entirely overlooked the possibility that adoption of the latter policy would help them in their efforts to promote the adoption of the former policy. Human nature is such that men who desire to accomplish a certain purpose have a strong tendency to adopt means which they believe will help them to accomplish the desired purpose. Practically all of the people that Mr. Richberg represents want government ownership of railroads. Why, therefore, should it upset his equilibrium to have it charged that they are advocating a certain policy regarding valuation for the purpose of promoting government ownership,—especially in view of the fact that it is plain to every reasonable man that adoption of the policy of valuation they advocate would be the surest way to make continuance of private ownership impossible and government ownership unavoidable?

If Senator LaFollette and Mr. Richberg did not wish what they called a "Conference on Valuation" to incur the suspicion of being merely a conference to promote government ownership, they ought to have had fewer government ownership speeches made and more people there who could not easily be identified as interested mainly in promoting government ownership.

June Railway Earnings

THE FEATURE that presumably will be watched for most closely in the June earnings reports now being given their usual wide circulation in the daily press will be the amount of net operating income reported by the northwestern carriers. The reason is the establishment last week of a receivership for the Minneapolis & St. Louis, which has drawn attention to the recent difficulties of the roads in the northwest as a whole. Another factor is the realization that whereas the average net operating income of all the Class I carriers in the country in the first five months of 1923 was at the annual rate (with due regard to seasonal variation of net income) of 4.98 per cent on the property investment, the rate of return in the northwestern region was only 1.96 per cent. The New England carriers earned at the rate of 0.88 per cent and after all that has been said about the New England roads, it is disconcerting that the usually prosperous roads in the northwest are only slightly better off.

June net operating income supplies a larger proportion of the total net operating income for all twelve months of the year than May. The Bureau of Railway Economics

figures show that May supplies 7.4 per cent and that June should supply 8.4 per cent of the year's total. In other words, to earn 5¾ per cent on their property investment, the carriers should earn in May $93,216,729, but in June $104,957,244; or to earn 5¾ per cent on the tentative valuation established by the Interstate Commerce Commission, $81,773,740 in May and $92,192,165 in June. In May, 1923, they actually earned $89,999,640, equivalent to 6.33 per cent on their tentative valuation. The figures thus far available do not indicate that in dollars the June net will greatly exceed that for May. It is not likely, therefore, that the June rate of return will reach the 6.33 per cent reached in the preceding month.

NET RAILWAY OPERATING INCOME

Road	June, 1923	June, 1922	May, 1923
Baltimore & Ohio	$4,004,590	$2,666,332	$4,297,175
Boston & Maine	885,307	769,878	801,578
Chicago, Burlington & Quincy	709,656	1,776,039	1,036,762
Chicago & Eastern Illinois	142,437	60,796	189,824
Chicago, Milwaukee & St. Paul	1,311,981	1,215,104	318,274
Great Northern	1,814,628	1,830,787	882,136
Illinois Central	1,430,861	1,840,664	1,716,475
Lehigh Valley	1,012,023	—32,044	710,988
Louisville & Nashville*	1,500,137	2,682,904	2,107,147
Missouri-Kansas-Texas*	781,966	1,146,191	897,709
New York, New Haven & Hartford	1,620,623	851,795	1,484,965
Northern Pacific	691,940	1,581,454	193,164
Pennsylvania Railroad	7,938,580	2,266,098	8,615,341
Southern Pacific System	5,195,002	4,994,699	4,148,457
St. Louis-San Francisco	1,438,704	1,811,494	1,565,212
Union Pacific System	2,229,325	2,265,672	2,417,598

* Net after taxes.

In a tabulation of the June figures for a selected list of typical roads, with comparison with June last year and May this year, certain disconcerting facts appear, notably with reference to the manner in which reductions in net are shown by such prosperous carriers as the Louisville & Nashville, the Illinois Central, the Union Pacific and the Burlington. The Great Northern and Northern Pacific show improvement over May this year, but reductions from June last year. They continue, nevertheless, to show very poor earnings and emphasize that all is not well in the northwestern situation.

The Farmers and the Railroads

THE MOST serious menace to the future prosperity and development of the railways of the United States now existing is presented by the sentiment which prevails among the grain growing farmers of western territory. The most recent expression of this sentiment took the form of the election of Magnus Johnson to the Senate from Minnesota. The nature of the sentiment which elected him is indicated by the answers he made recently to certain questions which were submitted to him by the Duluth Herald. In reply to certain of these questions he said he is in favor of (1) the repeal of the Esch-Cummins Transportation Act; (2) a reduction of freight rates, and (3) an advance in the wages of all railway employees.

When a man who says that he believes the wages of all railway employees should be increased can be elected to the United States Senate from an agricultural state, the farmers of which are clamoring for reductions of freight rates, it is evident that the sentiment toward railroads in his state is very bad. The sentiment in Minnesota, however, is merely typical of that which prevails throughout the central west and northwest.

A stranger to all other facts bearing on the situation would naturally conclude that such sentiment toward the railroads must be a result of prolonged oppression of the western farmers by the railways. He would naturally conclude that owing to this oppression the farmers among whom this sentiment prevails had long been suffering great adversity, and that this was the cause of their uprising against the railways. Now, it is true that owing to various causes, especially the recent low price of wheat as compared with the cost of most things the farmer has to buy, many of the farmers in the central west and northwest within recent years have been in distress. But it also is a fact that for more than a quarter of a century previous to the year 1921 the farmers of the western part of the United States prospered as greatly as did any other people in the world, and that they owed their prosperity very largely to the development of the railroads in their territory and the increase in the railroad service rendered. It is plain that the conditions from which the farmers of the west are suffering are temporary, and that if they do not allow their present suffering to cause them successfully to favor wholly unwise public policies, they will begin to prosper and increase in wealth again in a comparatively short time. It is equally plain, however, that they are supporting public men who favor permanent policies of regulation which, if adopted, would stop the development of the railways and absolutely prevent a renewal of economic progress in western territory and elsewhere until these policies were set aside.

Let us see how the farmers of western territory fared prior to three years ago and how the development of the railroads affected their welfare during that period. The story is really a marvelous one. In 1890, according to reports of the Bureau of Census, the western states—that is Illinois, Wisconsin and the states west of the Mississippi river—had 1,809,471 farms. The total value of the farms and farm property in these states at that time was $7,900,756,000. Of this total, $6,330,824,000 was the value of land. Compare these figures with the figures given in the accompanying table for the years 1900, 1910 and 1920:

VALUE OF FARMS AND FARM PROPERTY IN WESTERN TERRITORY

Year	Number of farms	Value of farm lands	Value of farm lands and other farm property	Increase over 1890 per cent	Average value per farm	Increase over 1890 per cent
1890	1,809,471	$6,330,824,000	$7,900,756,000	...	$4,366	....
1900	2,421,987	8,210,551,000	11,773,037,000	49	4,861	11.3
1910	2,734,924	20,003,888,000	26,918,738,000	241	9,842	125.0
1920	2,862,325	40,202,454,000	53,757,874,000	593	18,781	330.0

The statistics in this table show that in the 10 years between 1890 and 1900 the total value of all farm property in western territory increased $3,873,000,000, or 49 per cent; that in the 20 years from 1890 to 1910 it increased over $19,000,000,000, or 241 per cent, and that in the 30 years from 1890 to 1920 it increased $45,857,000,000, or 593 per cent. The increase in the average value of each farm between 1890 and 1900 was $495, or 11 per cent; between 1890 and 1910, $5,476, or 125 per cent, and between 1890 and 1920, when the average value of each farm was $18,781, it increased $14,415, or 330 per cent. The increase in the value of western farm lands alone in this period of 30 years was almost $34,000,000,000, and constituted three-fourths of the total increase in the value of all the farm property in that territory. The radical leaders in western territory indulge in much cant about the "unearned increment" in lands owned by railways, but the "unearned increment" in western farm lands greatly exceeds the total valuation of all the railways of the United States.

Since 1920 there has been a decline in the value of western farm lands. Wallace's Farmer estimates that Iowa land is now worth on the average about 25 per cent less than at the height of the "boom" in 1920. Even, however, if it be assumed that the value of land and all other farm property in western territory has declined 25 per cent since 1920, it still has a value of $40,500,000,000, which is about $13,500,000,000 more than its total value in 1910, and the average value per farm is still $14,086, or about $4,240 more than it was in 1910.

It ought to be evident to every intelligent man that the great increase in the wealth of western farmers could never have occurred without the increase which occurred at the same time in the mileage and carrying capacity of the railroads which serve western territory. Practically every part

of that territory is so far from all other means of transportation that except for the development of its railroads it would have today little more population and wealth than Siberia. Of course, the railways of western territory serve other producers, shippers and consumers besides the farmers, but the extent to which, in the period of 30 years that has been mentioned, they had to increase their total mileage and carrying capacity indicates the extent to which their mileage and carrying capacity had to be increased in order to enable them adequately to serve the farmers. Now, in 1890 the western lines had only 86,000 miles of line, while in 1900 they had 106,000 miles of line, in 1910, 140,000 miles of line and in 1920, 146,000 miles of line. The number of tons of freight carried one mile by them in 1890 was less than 26 billions, while in 1900 it was 50 billions; in 1910, 96 billions and in 1920, 145 billions. The increase in the freight business handled by them from 1890 to 1900 was 92 per cent; from 1890 to 1910, 270 per cent; from 1890 to 1920, 457 per cent. Even in the last 10 years of the period—1910 to 1920—they had to increase their carrying capacity over 50 per cent in order to handle the business.

Since it is obvious that the enormous increase which has occurred in the past in the production and value of the farms in western territory could not have occurred without this enormous increase in the transportation service rendered by the railways in that territory, it becomes highly pertinent to inquire what made it possible for the railways to handle such an enormously increased traffic. The answer, of course, is that their ability to handle this enormously increased traffic was made possible by the construction of new lines and by increases in the equipment and facilities of already existing lines, and that this increase in railway mileage and facilities was made possible solely by the investment of large amounts of new capital in them. This capital would never have been invested in the railways if the investors had not believed the railways would be allowed to earn and pay reasonable dividends; and if it had not been invested the vast increase in the wealth of the farmers of western territory could not have occurred.

Now, while the farmers of western territory are suffering severely from present conditions, these conditions, as already stated, will gradually be righted, provided no action is taken which prevents them from being righted. Farm prices were very low after the panic of 1893 and the western farmers suffered severely then, but the conditions which caused these low prices disappeared and, as the statistics already given show, the farmers subsequently prospered greatly over a long period of years. But suppose that 25 years ago the western farmers had succeeded in causing the adoption of a policy of regulation which would have frightened investors away from the railways and which from that time on would have prevented any further development and increase in the carrying capacity of the railroads that serve western territory. When the prices of farm products became such that the farmers, if they could have shipped them to market, could have sold them at a profit, they would have been rudely awakened to the fact that because of the policy of regulation that had been adopted the expansion of the railroads had stopped and that in consequence it had become impossible for them to carry to market all the crops produced. This condition of affairs would have made absolutely impossible the increase of over 15 billion dollars in the value of farm property in western territory that occurred between 1900 and 1910 and the further increase of about 26 billion dollars in its value which occurred between 1910 and 1920.

The farmers of western territory, in spite of the decline in the prices of their products which has occurred within the last three years, probably are today worth approximately 30 billion dollars more than they would be worth now if there had been adopted in 1900 a policy of regulation which would have stopped the development of western railways. But if the adoption of such a railroad policy over 20 years ago would have had this disastrous effect upon them in the past, the adoption of a similar policy at the present time would have just as disastrous an effect upon them in future. And, yet, at the present time a majority of the farmers in western territory are supporting politicians who are advocating a permanent policy of railroad regulation which, if adopted, would in future have just this disastrous effect upon the farmers. Senators Brookhart, Johnson and others are not advocating merely a reduction of rates. They are advocating reductions in the valuation of the railways and other measures which, if adopted, would *permanently* restrict the net return earned by the railways to a lower basis than it has ever reached even in years of panic and depression. This policy, if adopted, would *permanently* stop new investment in the railways and the increase of their carrying capacity, and unless they can increase in the future as they have in the past the amount of traffic they can handle, then the western farmers never can in the future, as in the past, enjoy an increase in their prosperity and wealth.

The most important fact to a realization of which the western farmers need to be brought is that the false political prophets they are following are attempting to capitalize the *temporary* conditions from which the farmers are suffering to fasten upon the country a *permanent* policy of regulation which would *permanently* stop the development of the railroads, and would, therefore, have *permanent* effects upon the farmers that would be far more disastrous to them than the temporary conditions from which they are now suffering.

New Books and Special Articles of Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books

The Open Door Doctrine in Relation to China, by Mingchien Joshua Bau. Discusses the relation of the open door doctrine to spheres of influence, Chinese railways, Japan's special interests, etc. 245 p. Published by MacMillan, New York.

Periodical Articles

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Recent Developments of the Motor Coach, by C. E. Brooks. Discusses the advantages and disadvantages of the various types of gasoline-engine, storage-battery, steam and gas-electric cars. Mechanical Engineering, Aug., 1923, p. 463-467.

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This Man Can Run Anything, by Edward Hungerford. Daniel Willard and the Baltimore & Ohio. Third article in a series of stories about our railroads. Collier's, August 4, 1923, p. 10, 21-22.

Letters to the Editor

[*The* RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about* 250 *words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.*]

Discouraging the Prospective Locomotive Fireman

PORTLAND, Oregon.

TO THE EDITOR:

Professor Howard D. Dozier's article on "Why Do Not College Men Enter Railroading?" was very interesting to me. As a locomotive engineer, I wish to say that the article applies to the train service as well.

Most railroad executives laugh at "book learning" of any kind that teaches operation of locomotives and trains. They believe in the experience only. Take for example a man who has taken an I. C. S. course on locomotive firing. When he attempts to secure employment he generally receives no credit at all for his study. Still, the best firemen and engineers I ever met depended on their book learning for their success. Therefore, I believe this prejudice against book learning is more a habit than anything else. The "old timers" didn't believe in books and the newer generation is following in their footsteps.

Another thing that has been passed down by the old timers—a man chosen for a position as a fireman should be a boy—an apprentice in fact. I contend that this is a mistake for two reasons: First, a fireman's position has too many responsibilities for too young a man; second, a fireman is not really an apprentice to the engineer. His job is a separate one. It is a different kind of work; therefore it cannot be an apprenticeship.

The reason a fireman is promoted to engineer is because he is the most logical man for that position, not because he has been an apprentice. When a fireman is promoted he is not an engineer in any sense of the word. It generally costs the company considerable money before a real competent engineer is made of him. I wish to impress upon every railroad executive who reads this that the more book learning a fireman has, the easier it will be for both the company and the man.

This brings up the question of age limits for firemen. Some companies have an age limit so vicious and restrictive that a young man over 25 years of age cannot secure employment as fireman, unless he has previous experience. How can these railroads hope to get future engineers with such an age limit? How many young men at 25 or younger know their own minds, let alone having the ability to meet the heavy responsibilities of a locomotive fireman. The railroads seem to forget they hold their firemen equally responsible with the engineer. Experience has proved that these young men do not make as reliable engineers as older men. Anyway it looks mighty bad when a young engineer is mixed up in a bad wreck.

Of course a man hired at 30 to fire a locomotive will be middle aged by the time he is promoted. However, he will probably be worth more than the boy hired at 21 or 25. Surely if his heart is with the work he is too valuable a man to turn down. I do not believe there is any justification for a 25-year maximum age limit for men desiring work as locomotive firemen. In two years of inquiry I have failed to find just one real good reason why such an age limit has been adopted. If any of the readers of the *Railway Age* know the real reason why a railroad should have such an age limit, I should like to hear from them through these pages.

LOCOMOTIVE ENGINEER.

Favors Celebrating Centennial in 1925

CHARLESTON, W. Va.

TO THE EDITOR:

About 100 years ago, the first railways—then called tramways—were built and used in England for the purpose of conveying coal from the mines to the seaboard. Of course steam railways were not used till a few years later. Anyhow, about the year 1925, the end of the first quarter of the twentieth century, would be a fitting time for the celebration of the one hundredth anniversary of the invention and building of railroads, for from the first tram roads with horses as the propelling power came the steam railroads in quick succession.

Other things have come and gone, but railroads are with us yet and there is not likely to be a better means of transportation for some time yet to come. The railroad has been the greatest civilizing agency the world has ever known. It is found in all countries of the world, carrying civilization to the remotest parts of the earth. It is as indispensable in the great trade centers of all the important countries as life itself. The stopping of all trains going into New York, London, Philadelphia or Chicago for a single day would bring a paralysis to all business for the time being.

Since it has become a custom of modern times to celebrate big events in the history of nations by having holidays or expositions, why not celebrate the introduction of the railroads? It is something the entire world is interested in and could take part in; and as America has a far greater mileage of railroads than any other country and was one of the pioneer countries in building railroads and extensive lines of railroads, should not America take the lead in some kind of an appropriate and fitting method of celebrating the one hundredth anniversary of their introduction and use? Such international events well serve as milestones in the world's history and in the progress of civilization and a railroad centennial would afford an occasion to take stock of our means of transportation, see from what they have evolved and what the probabilities of the future are along that line. Little did that person know who invented the first wheel to push about some kind of a crude cart that that same wheel in an improved form would forever be used in machinery and be the means of rolling people over the ground at the rate of 100 miles an hour.

DUNCAN MCRA.

[The *Railway Age* has on several occasions expressed itself editorially as favoring the celebration of a railway centennial and the American Railway Engineering Association and the Mechanical Division of the American Railway Association have adopted resolutions endorsing the idea.—EDITOR.]

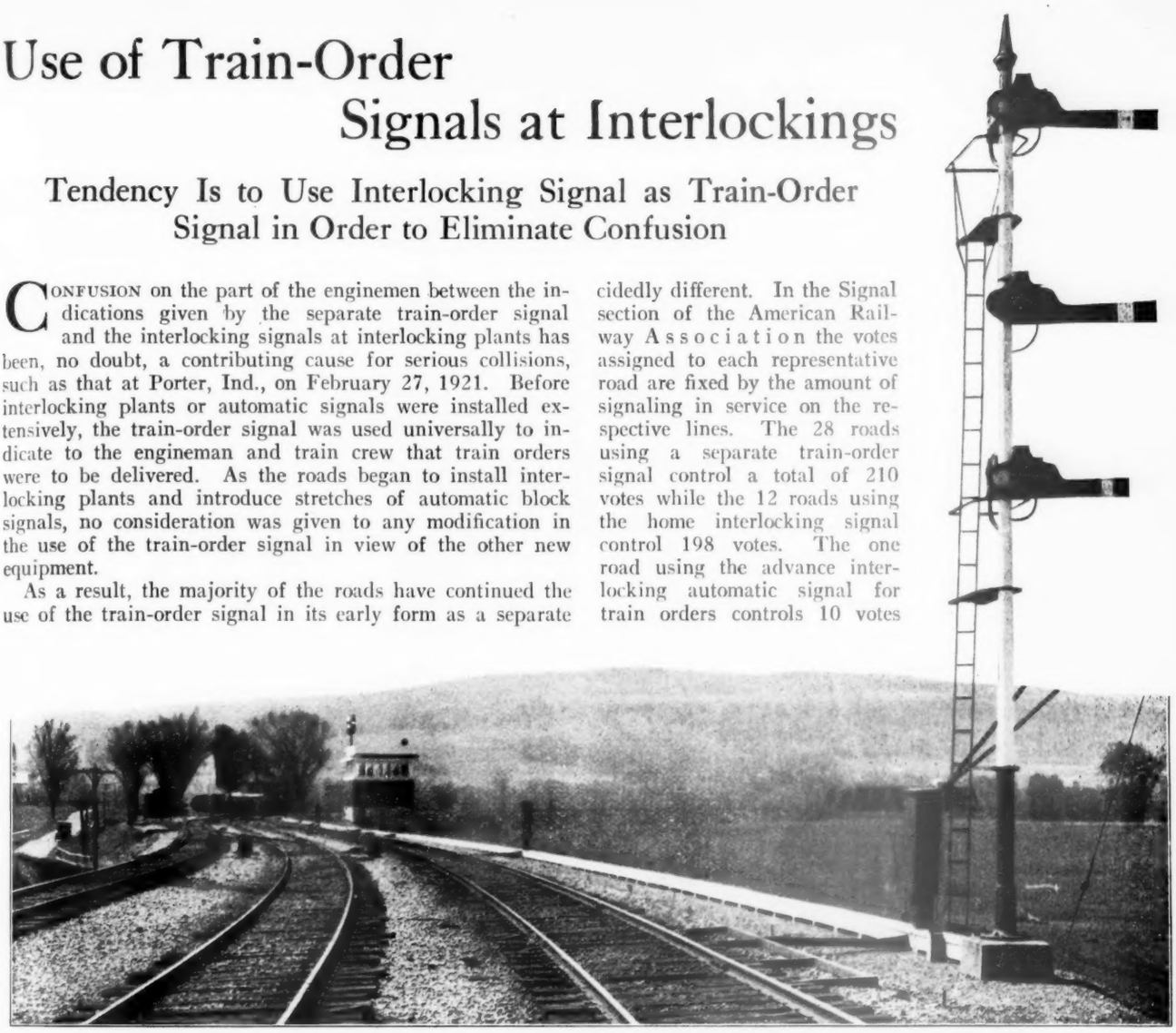
SUMMER PASSENGER TRAFFIC from Chicago to the National parks and the Pacific coast has begun in volume approximately 40 per cent over that of last year, judging by the number of overflow sleepers that have been required from June 1 to July 16. National park figures show that 11,100 tourists visited the Grand Canyon during June and that for May and June, 1923, the travel was twice that of 1921. The Chicago & North Western, the Chicago, Milwaukee & St. Paul, the Chicago, Burlington & Quincy, and the Chicago, Rock Island & Pacific report general increases in tourist traffic both local and through; but they feel the effect of the growing popularity of motor travel.

Use of Train-Order Signals at Interlockings

Tendency Is to Use Interlocking Signal as Train-Order Signal in Order to Eliminate Confusion

CONFUSION on the part of the enginemen between the indications given by the separate train-order signal and the interlocking signals at interlocking plants has been, no doubt, a contributing cause for serious collisions, such as that at Porter, Ind., on February 27, 1921. Before interlocking plants or automatic signals were installed extensively, the train-order signal was used universally to indicate to the engineman and train crew that train orders were to be delivered. As the roads began to install interlocking plants and introduce stretches of automatic block signals, no consideration was given to any modification in the use of the train-order signal in view of the other new equipment.

As a result, the majority of the roads have continued the use of the train-order signal in its early form as a separate and distinct feature from the interlocking or automatic signals.



Typical Example of a Separate Train-Order Signal at the Tower Indicating Clear While the Home Interlocking Signal Is Indicating Stop

However, as interlocking plants became more numerous and as automatic signaling was extended, several important roads have found that one set of signals is less confusing than two. Therefore where the train-order indication can be given by the interlocking or automatic signals the separate train-order signal has been abolished, thereby securing a minimum of signal indications. In view of the fact that accidents have been caused by a confusion of signal indications at interlockings and as progress very evidently demands a simplification of signal indications, the *Railway Age* has collected data from numerous roads regarding this phase of signaling for the benefit of those interested.

Many Roads Continue the Use of the Separate Train-Order Signal

Of the 42 representative roads that furnished definite answers, 28 are following the regular practice of using a separate signal for train orders, while 12 roads are using the home interlocking signal as a train-order signal. At least one important road is using the advance automatic signal as a train-order signal at interlocking plants on double track.

These figures show a large preponderance in favor of separate signals, but if the data are considered in the light of the amount of signaling in service the proportions are decidedly different. In the Signal section of the American Railway Association the votes assigned to each representative road are fixed by the amount of signaling in service on the respective lines. The 28 roads using a separate train-order signal control a total of 210 votes while the 12 roads using the home interlocking signal control 198 votes. The one road using the advance interlocking automatic signal for train orders controls 10 votes which if added to the 198 would make 208 votes as compared to 210. Therefore the proportions are practically equal.

Reasons for Continued Use of Separate Train-Order Signal

Aside from the fact that there is a strong tendency to continue the use of established practices, several important roads have advanced strong arguments for the continued use of a separate train-order signal at interlockers. The most important of these arguments presented by the roads may be summarized as follows:

1. A separate signal is necessary in order to give a distinct train-order indication.
2. To avoid delay on account of stopping trains at the interlocking home signal which would require the conductor to walk up to the tower to secure the written order.

Those advocating the use of the interlocking signal as the train-order signal meet the argument as given above; (1) by the statement that, there seems to be no valid proof of the distinction between the two separate signal indications judging by the reports received on conflicting indications, which are noticeable at night especially. In the automatic block signal territory, with particular reference to double track, argument 2 is of no consequence, as a stop need be made

for a "31" order only, and in automatic block territory the use of "31" orders is not frequent.

Arguments for the One Indication

The principal argument in favor of the use of the interlocking signal for a train-order signal is its simplicity and the elimination of any confusion of signal indication; as for example, the engineman mistaking the "no-order" indication of the separate train-order signal for a proceed home interlocking signal indication and therefore over-running the interlocking signal. Another argument expressed by several roads is that a separate signal is not necessary, and can very well be eliminated. The situation is summed up very well in the remarks received from the Baltimore & Ohio as follows:

"For at least 20 years the Baltimore & Ohio has strenuously opposed the installation of separate train-order signals at interlocking plants. Our standard practice for at least 15 years has been to utilize the home interlocking signals and thus avoid the possibility of misreading signal indications. It is felt that there is no necessity for a separate train-order signal either in automatic signal territory or at interlocking plants. Automatic signals, where it happens to be necessary to arrange them for combined use, can be used very readily, in fact, we have a number of such points where the signals are so arranged by using two arms, the lower arm being for permissive operation.

"It is our opinion that such signals as separate train-order signals, when not arranged so as to indicate stop when the crossing is to be used by a conflicting train, are a menace to safe operation. The Baltimore & Ohio standard practice in the future will be to provide the means of blocking trains by the use of home interlocking signals, and as early as possible the few separate train-order signals we may have at interlocking plants will be removed. In addition to this, we are advocating with the lines crossing our road that when derails on our tracks are closed for our traffic, that their train-order signals should indicate stop."

Some Roads Use Both Methods

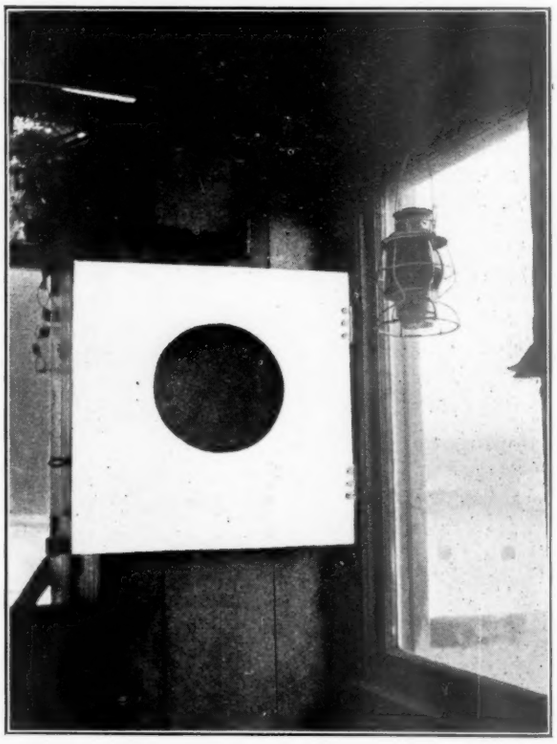
No fixed rule can be used for the discard of the separate train-order signal. For example, the Southern Railway uses a separate train-order signal on single track while the interlocking home signal is used for train orders on double track. Again on the Chicago & North Western a separate train-order signal is considered necessary in non-automatic territory due to the fact that if the home signal is used for both, the leverman can clear the signal without orders and might forget the block, thus leaving no protection, whereas, in automatic block territory trains are still protected by the automatic signals. In automatic block territory the home interlocking signal is used as a train-order signal on this road.

On the Chicago, Milwaukee & St. Paul at interlocking plants on double track equipped with automatic signals, the advance automatic signal is used as a train-order signal and carries a cast iron sign reading, "Train Order Signal." This sign is 20 in. square with 5 in. raised letters painted white on black. This signal is located beyond the crossing opposite the home signal for the opposite direction. In order to prevent any confusion of signal indications with that of the home signal this automatic train-order signal is so interconnected electrically as not to permit it to assume the proceed position except when the home signal is clear or the track circuit between the home signal and the train-order signal is occupied.

Methods of Operating With Separate Train-Order Signal

The majority of those roads using a separate train-order signal follow the method of operation given in the standard A.R.A. rules 221, 221A or 221B. However, some roads hold the signal normally at danger and require that the engineman actually see the signal cleared, otherwise he must stop to inquire for orders. One road has a special rule which reads as follows:

"When a train approaching a train-order office has reached a point where the train order signal is entirely visible and not to exceed one quarter of a mile therefrom, the engineman will give four short sounds of the whistle; if there are no orders for the train, the signal must be changed to 'proceed.' Enginemen will acknowledge this change by two short sounds of the whistle, or, if the signal is not changed to 'proceed,' give one short sound. If there are no orders for the train, the signal must be held at 'proceed' until the rear end of the train has passed 200 ft. beyond the signal, when it must again be changed to 'stop.' Should the signal be found in the 'proceed' position, however, enginemen will bring the train to a stop before passing the signal, even if it is afterwards changed, get a clearance card explaining the improper position and report the occurrence to the chief train dispatcher from the next open train-order office where a stop is required."



Train-Order Indicator and Red Lantern as Used in C. & N. W. Tower

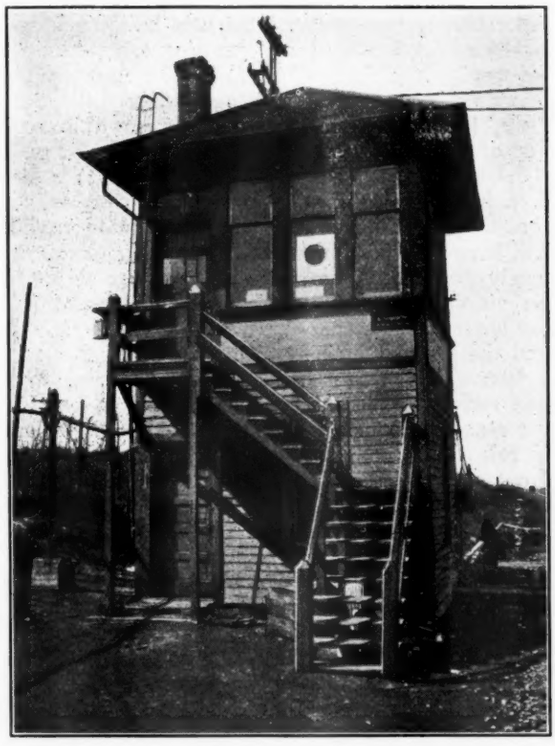
As a general rule, on double track the train-order signal is left normally at clear while on single track the signal is normally at stop.

On only five roads using a separate train-order signal is the train-order signal interlocked with the home interlocking signal so as to prevent the train-order signal being at proceed without the home signal also being at proceed. The Chicago, Milwaukee & St. Paul, the New York, Chicago & St. Louis and a few other roads interlock the train-order signal electrically with the approach and distant signals so that the distant signal will show "caution" with the train-order signal at "stop." The Boston & Maine follows this practice at a few plants. On the Missouri Pacific the train-order signal levers are interlocked mechanically in the machine with the interlocking signals.

As it is generally recognized that there is a danger of the proceed train-order signal indication being mistaken for a clear home interlocking signal, the roads have used various methods of placing the signals to secure a distinction of location at least. On the Buffalo, Rochester & Pittsburgh

train-order signals have one light at the top of the mast. The interlocking and block signals have two lights, the indication light and the marker light, vertical lights for interlocking and staggered lights for automatics. In addition, an effort is made not to have these signals in line with each other as viewed from an approaching train. That is, the signals themselves are distinctive and so placed that they are not readily confused.

On the Chicago Great Western the train-order signals are mounted on a lower pole than the home signals and unless due to some unusual condition, are located immediately outside of the telegraph office. Home signals mounted on the



Special Train Order Indicator in Tower Window As Used in Conjunction with Home Signal on C. & N. W.

higher pole and placed a considerable distance from the tower and to the right of the track governed do not conflict in any way with the order signals.

Regardless of the measures taken, the summary of the results obtained contains an expression of doubt as is evident in the report of one road as follows: "We *endeavor** to keep the location of all signals such that there will be no chance for enginemen to misread or take one signal for another."

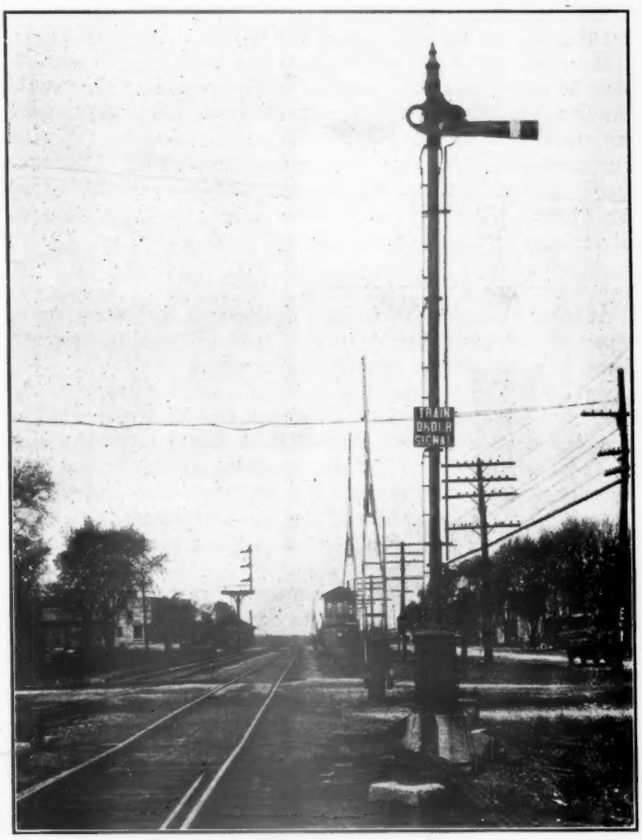
Method of Using Interlocking Signal As Train-Order Signal

Roads using the home interlocking signal to stop trains for train orders at interlocking plants, include the Erie, the Lehigh Valley, the Baltimore & Ohio, the Pennsylvania, the Chicago & North Western, the Delaware, Lackawanna & Western, the Cleveland, Cincinnati, Chicago & St. Louis, the Long Island and others. On the Lehigh Valley where no separate train-order signal is provided at an interlocking plant, the home signal of the interlocking plant is used as a train-order signal, in addition to which operators must display a red flag or a red light outside of the tower, to indicate to conductors and enginemen that the fixed signal is displayed for train orders in addition to its function as an interlocking signal. Clearance Card, Form T-511, must be issued when the home signal is held in the stop position for following trains in addition to Clearance Card Form (A).

On the Chicago & North Western at an interlocking plant in automatic signal territory, the home interlocking signal may be used to stop trains for train orders. A red disc or red flag by day or a red light by night so placed at the interlocking station that it may be seen from the train so stopped will indicate to enginemen and trainmen that there are train orders.

On another road the rule reads, "Enginemen finding a red signal displayed at the tower and home signal indicating 'Stop,' will acknowledge the signal displayed from the tower by two short blasts of the whistle. When the signal is acknowledged, the operator will, if other conditions permit, clear the home signal, permitting the train to pull up to the tower for orders. Trains will not leave towers where such signals are displayed without orders or clearance cards."

On the Pennsylvania the rule reads, "When a train order is to be delivered to a train, the fixed signal, the home block signal, or the home interlocking signal must be displayed at 'stop' for the track and in the direction of the approaching train, a flag or light must be displayed in the place provided



On the C. M. & St. P. the Advance Automatic Signal at Leaving End of Interlocking Is the Train Order Signal

for the purpose, a red flag or light indicating '31' orders, a yellow flag or light indicating '19' orders. This combination of signals must be acknowledged by the engineman by two short sounds of the engine whistle."

THE SALE at public auction of the Chicago, Peoria & St. Louis has been tentatively set for 12 o'clock noon, September 26, on the steps of the Sangamon county court house at Springfield, Ill. According to the order of the court, the road may be sold in whole or in part.

*The italics are ours.

Should Railroads Practice Better Merchandising Methods?

By N. C. Tompkins
Adv. Mgr., The Creamery Package Mfg. Company, Chicago

THE OBSERVING BUSINESS MAN realizes that railroads as a class have not progressed in the merchandising or selling of their product as far as have other branches of business and this is a matter that intimately concerns business men because transportation is the life-blood of commerce. Whatever will make railroads more prosperous will make business more prosperous.

The railroads during the past few years have rapidly come to the fore as advertisers, but their efforts have been devoted almost entirely to the passenger end of the business. Seldom indeed does any freight advertising appear, although any well informed railroad man realizes that freight tonnage is the "bread and butter" branch of the business. It would seem as if they were now putting the cart before the horse. The manufacturer or merchant who advertises his least profitable product would be considered very foolish indeed, but this is approximately what the railroads are doing.

It is true that during the last few months the railroads have in many cases had more freight offered than they could handle; but even so in every train of mixed freight there are usually several cars that are not loaded to capacity. Furthermore, present conditions are temporary. The railroads are rapidly increasing their capacity and the day is not far distant when they will need freight tonnage. Proper advertising and selling will give it to them.

Easy to Advertise Freight Business

At first thought the freight business would seem to be a prosaic, difficult subject to advertise. In reality however, there is a wealth of interesting material available. The advertising man's pencil itches to go, when he thinks of the copy and illustrative possibilities of freight transportation. Few business men have more than a vague comprehension of how their freight is handled from the time it leaves their warehouse until it is delivered to the customer, and yet all phases of the process should be of vital interest to them, since it is their own goods—the children of their brain—that is concerned.

A manufacturer would be intensely interested to know that a certain road had put in conveying systems or handling devices which speed up his shipments or lessen the danger of damage. He would be interested to learn of a system that would minimize the chances for his shipment to go astray. Shippers, too, would be interested in the air lines, "ships that pass in the night," and in fact a thousand and one things intimately connected with railroad freight transportation. The operating departments of many railroads are really doing marvelous things better to serve the freight shipping public, but they are remarkably quiet about it. They are "hiding their light beneath a bushel" and therefore are missing an opportunity to secure an additional volume of tonnage and to acquire a continually growing public good will.

In other words the railroads should sell the romance of their freight business just as they are now selling the romance of travel, because romance appeals to all men, whether low or high degree.

With the exception of a few of the western roads, the railroads are overlooking an almost inexhaustible opportunity to build up their business by building up the towns along their right-of-way, particularly towns in which they have no competition. It frequently seems, in fact, that the railroads are endeavoring to strangle the growth of such towns by giving poor service, simply because they have a monopoly of such business as exists. Yet it has been proven in numerous cases that the growth of almost any town can be stimulated in a healthy manner, if the effort is properly made. The latest example is Alexandria, Minn. As a result of the work of the local chamber of commerce in this town during the past two years, they have tripled the business of the local merchants and are doing twice as much business as any other town of the same size in the northwest. This means double the business for the railroads entering Alexandria, but they probably contributed nothing in time, thought or money to bring this condition about. An opportunity exists for hundreds of towns greatly to increase their business, but local talent and leadership to do this is usually lacking. Would it not be entirely practical for a railroad company to establish a business building bureau to get such good work started in promising towns along their right-of-way?

The writer is acquainted with a beautiful little town in Michigan, 100 miles from Chicago, that is within walking distance of three picturesque and fairly large lakes. All of the lakes have good beaches, one of them has a 40-acre island on it and the fishing is equal to lakes 500 miles from Chicago. If the Chicago resorters were familiar with it, it would have 10 times its present summer population. Unfortunately the business men of the town have no ambition and no vision. The railroad hampers the growth of the town by having but one passenger train a day in each direction and these stop at inconvenient hours. If the railroad would stop another train or two a day, or rearrange its schedule and stimulate the local merchants to boost their town, it requires no mathematician to realize that the gain for the railroad in both freight and passenger traffic would be all out of comparison to the effort expended.

It is customary for large corporations other than railroads, to build the business they serve and so build themselves. A prominent laundry machinery company is advertising in general magazines, simply to increase the business of steam laundries; a dairy machinery company is stimulating the business of milk dealers, and a yeast company is boosting the bakers' business. The railroads would be doing only what had proven of value to other business men, if they made an effort to stimulate the growth of the towns through which they pass. It is not difficult to imagine what it would mean to the railroad freight tonnage if several hundred comparatively dead towns were brought to life. Better streets, better public improvements, better food, better clothing would soon be demanded, not only from the citizens of the towns, but from the inhabitants of contiguous farms, who would share in the new prosperity.

An alternative of having a staff within the railroad organization to stimulate the business of small towns is the "Neosho" plan, sponsored by the Associated Advertising Clubs of the World and adopted by eight of the leading railroads. This plan contemplates the establishment of advertising clubs, composed of the merchants, in small towns. These little clubs are studying methods of developing business in their towns and have already accomplished excellent results.

There are, of course, numerous other ways that a merchandising department can sell both the freight and passenger transportation end of their business at a profit, but the two examples cited will perhaps yield results most quickly and in greatest volume.

THE CINCINNATI RAILROAD TERMINAL DEVELOPMENT COMPANY, Cincinnati, Ohio, has been incorporated with a capital of $250,000. The organization is preliminary to a larger organization to be capitalized at $20,000,000 for the purpose of building terminals in the lower section of the city, to be offered for lease to the railroads entering Cincinnati. G. D. Crabbs, president of the Phillips-Carey Manufacturing Company, is president of the new development company.

The Transportation Ratio Must Be Reduced

It Is Much Too High Now When Compared with Past Performance—How It Can Be Done

By Stanton Ennes

EVERY SIGN of the times points to the necessity of reducing expenses.

Every issue of the *Railway Age* has something to say about "Prospective Adverse Legislation." The Literary Digest's recent composite of editorial opinion on what the next Congress may be expected to do to the railroads was at best disturbing. A raid on rates is the least of the punishment threatened. Magnus Johnson's election to the Senate, giving to the group in that body pledged to rate reductions, the balance of power with all of the possibilities that go with that position, is now an accomplished fact. The storm gathering in the northwest is beginning to appear in the coal fields and there is no telling where it will stop. Already we have calls for an extraordinary session of Congress and if the volume of business decreases, as it usually does with falling prices, the call for action will become louder and our difficulties will multiply.

Costs Must Come Down!

As to the unfairness of the demand for reductions; our inability to meet them; the protection due us and to be expected from the Interstate Commerce Commission, the courts and the people; our guarantees against confiscation; the fact that the railroads were starved and development stopped while others were fattening and expanding; that we are still paying war prices for everything we buy; that transportation is a necessity and must be provided and paid for either by charges for the service or taxes, they are all true, but along with contending for justice in the fullest measure and to the last ditch, the time is at hand when everyone must face deflation. One of our duties, one of our many duties, is to find a way to reduce operating costs.

Any reduction in rates must be offset by reductions in operating cost. The *Railway Age* has said that any reductions made must come out of conducting transportation and the *Age* is right.

The margin between gross revenue and operating cost is too small now and cannot be lessened, while maintenance, both of road and equipment, must be strengthened rather than reduced, regardless of cost. The remaining accounts represent too small a portion of the whole to afford any relief, so once more we must go after transportation costs.

Reducing transportation costs is an old story. We've done it before and can do it again; but each time it is a little harder.

Early Retrenchment Methods

Many of us can remember when reducing expenses meant arbitrarily cutting forces. Some managers, famous in their day, were reported to have called for the payroll, drawn a line through each alternate name followed by a time check and they got results. Judged by present standards their methods were crude, but they were right in this fundamental: all of us are prone to add force in rush periods and slow to reduce when the rush is over.

Then we got tonnage and the train load. They came to us out of the northwest and we were taught that the fellow who got the train load got reduced costs regardless of time on the road and generally that was true.

This took such hold, that on many roads it was a serious offense to run a train in either direction short of tonnage and this went so far that to avoid explanations and maintain a showing, engines and crews were held for days at distant terminals. When the needs for power at the other end of the division compelled us to run them back, and we didn't have the cars for a full train, we doubleheaded the engines and deadheaded the train crews but we got results and incidentally, in time we also got away-from-home-terminal overtime which somewhat modified the results and the practice.

Car Load and Train Load

In developing the train load we soon learned that the carload was the basis of the trainload and we went after the carload with gratifying results. Then, further to cheapen the cost by increasing the trainload, we got bigger engines to haul bigger trains and still bigger engines with all manner of attachments to increase their power and when we could not get a big enough locomotive we doubleheaded and added pushers; but we got the train-load and some of the expected reduction in cost.

Heavy Trains—Slow Movement

However, while we were increasing the train-load the big trains slowed up the movement, largely because other facilities were not developed with the train; we didn't have the money. This slowing up of movement checked or limited the earning capacity of engines and cars, while at the same time everything that went with and is necessary to the movement of cars, labor, fuel and supplies went up about as fast as the train-load so that the results in the way of reduced costs were not all we expected. Nevertheless, the increased train-load helped us over many financial difficulties. We were working along the right lines.

Speeding Up the Machine

The next major movement to control costs was an effort to speed up the machine and get more output and we did some job there. The operating vice-president's reports are on his desk at 9 a. m.; and at 9.15 he has the general manager on the phone. "Well, you did pretty well on the first and third yesterday but what's the matter on the second and fourth? Better light a few fires there." The G. M., not to be outdone or caught napping, has already been down the line and the division office is in a haze. The superintendent is very sure that he will be discharged in the end and wouldn't be surprised to see his relief come in on the next train. But again we got results; it is astonishing what men will do to hold their jobs.

In addition to these, a multitude of other ways and means of economy were developed and installed; signals, fuel economy, water treatment, demurrage and many other valuable improvements to the conduct of transportation.

But now, for ever so many reasons we must do it all over again. The complaint that is so general and is growing so insistent, that our charges are too high and must come down, cannot be ignored and we know that any reduction in income must be met with reduction in costs. But aside from any fear of what the law makers may do, or of the necessity for meeting reduced income, the transportation ratio, the cost of

conducting transportation is relatively too high when measured by the standard of past performance. Every experienced railroad man knows this and the reports published from month to month prove it. Control of this expense got away from us during the war and we have never recovered it and the sensible and obvious thing to do is to go after it now before we are compelled to do so by the force of reduced income. And here let me predict that the job will be easier than expected. It always is. The hard part is to make an earnest start. This is confirmed by a cursory survey of the monthly reports. So many men, so much equipment and such high ratios for the volume handled, all prove that much that was done has been lost, and it should not be difficult for the men who did it before to recover a substantial part of the loss.

All of the old plans that have proved their worth so many times must be revived, renewed and intensified; and if possible new methods found and developed. Again the superfluous employee must be withdrawn, the car, engine and trainload, both road and yard must be strengthened and delays, waste and lost motion eliminated. These methods always brought results in the past and can be depended upon to do so again.

In addition to these old and trustworthy plans good results can be secured by a combination of skill, good tools, system and cost accounting. None of these are new. All are available on all railroads. All are in use on many roads and most of them in use on all roads. All are developments of our experience and have proved their worth so often that their value is established, and all can be installed and enforced on all roads at a minimum of cost.

Skill

Skill in transportation, skill in moving passengers and freight in cars from place to place is like skill at anything else. It is knowledge and the ability to apply that knowledge to the work at hand. It is knowing how, knowing how to do it yourself, knowing when it is done right and above all, it is knowing how to plan for and teach the other fellow how to plan for and do it himself, well and cheaply. Unfortunately I do not know of any school that teaches this skill or in which it can be acquired, except the school of experience, but most railroads are well supplied with graduates. Without skill nothing else matters much.

Good Tools

Good tools—meaning good track, good engines and good cars. No one ever secured low transportation costs for any length of time without reasonably good track, engines and cars. Freight cannot be moved cheaply over track that is weak and rough, or with engines that are failing, or cars that are breaking down. Either or all of these disabilities spell delays and derailments with injuries to passengers and employees, damage to lading, equipment and track and increased costs for personal injuries, loss and damage to freight, clearing wrecks, overtime, fuel and supplies, followed by a loss of business, but most costly of all, loss of morale of the men. Fix up the track and equipment on a run-down division and watch the men respond, neglect these facilities and see indifference grow.

System

System—Moving cars by methods, and plans and at hours carefully worked out and scheduled in advance. Installing order and running trains made up to order and at times agreed upon in advance, instead of waiting for the cars to accumulate and then running them when the yard, the roundhouse, the car men, the call-boy and the boarding-house are ready for them. The extent to which this can be done and the improvements in service and cost that automatically follow, cannot be covered in the reasonable limits of a magazine article; but, fortunately, details are not necessary.

To do full justice to the scheduling of a division or a large terminal requires a knowledge of the transportation necessities, based on detailed studies of past performance, along with current and prospective business; but nothing so exhaustive or detailed is necessary to secure substantial benefits from charting the work. Furthermore, if it is a new thing the simpler the beginning the better. Let the practice grow and develop gradually.

An Example

To illustrate its application to the business from one terminal of a typical single track division:

We all know how hard it is to keep up with the work, how often our reports show more cars at a terminal to move than were forwarded in the preceding 24 hours. The standard explanation is "The power was late arriving," which usually means that it was not started in time, or "The power was held for work," or "We got out three trains within two hours after the check was made and the situation is not as bad as indicated by the report," but the next day's report, and the next, are much the same.

A check of the records at terminal "X" for 30 days showed an average daily outbound movement of 250 cars, in five trains with about the same number of cars left over at the end of the period as were on hand at the beginning, and enough cars on hand for at least one train every time a check of the yard was made. It also showed one day when only two trains were run, several days with three, one day with 10 and several with seven, but the average was five and the approximate departing time was 3.00 a. m., 9 a. m., 2 p. m., 8 p. m. and 9 p. m. The 8 p. m. had the loading from the house and was the most regular. There were two days when engines waited for cars, but on all of the remaining days cars waited for power. That is, on 28 out of 30 days the business was ahead of the movement and the freight in transit, along with the earnings of the railway company were held up; the earnings of the cars stopped and per diem charges of at least $100 a day accrued.

Trains Can Get Out an Hour Earlier

The check also showed that with the exception of the merchandise train at 8 p. m. none of the crews were called until the train was ready. This was to avoid terminal overtime. Summed up, the movement based on past performance from "X" averages 250 cars a day and can be handled in five trains a day; and if the five trains are run every day, the bunching or big days with 10 trains, will be reduced or eliminated. The five trains necessary to keep "X" clear will more than handle the business in the opposite direction; and inasmuch as we must and will furnish them in the end, we had better accept the situation and furnish them daily and in time to reduce the delay. Get ahead of and crowd the movement rather than behind it.

In arranging for this schedule, first consult the time card chart and develop when the trains can be handled with the least interference, and list them accordingly; generally they can be got out an hour earlier than the average of the record. By this first move of selecting times when trains can be started to the best advantage of the division as a whole, instead of running them as the cars accumulate and the power is available, a real start has been made towards establishing order.

Having selected the best times for running trains, make a list of the trains to be run with the make-up and departing time. If doubtful about scheduling all of them, schedule part of them; but if only one train is provided for, make the running of that train with the cars ordered in it, and at the time named, imperative. That's the crux of the plan. Success depends on promptness and regularity. Hold every

one for having the wheels turning at the advertised time in exactly the same way they are held for the departure of passenger trains. If this can't be done, the plan had better be scrapped; continue to run trains as and when the yard offers them.

Distribute the schedules to chief dispatchers, car distributers, yardmasters, roundhouses, car foremen, call-boys and every one interested, so that all will know what is required of them and what to do; and then watch the results.

Exactly the same system can be applied to the work of the heaviest multiple track divisions with the addition that the denser the traffic the greater the necessity for system and the greater the benefits.

It can also be applied with equal advantage to the yard work of the largest city terminal.

Charting Yard Engine Work

City terminals with their network of yards and tracks that in most cases grew as "Topsy" did, with foreign line connections, freight houses, team tracks, warehouses, docks, industries, stock yards, car yards and coal chutes scattered over long distances, all to be served with cars from everywhere, arriving in trains from all directions and at all hours, with their variety of service would seem to furnish a puzzle that would bar preparedness forever. But, as a matter of fact, one of the largest roads in the country now has the movement of every engine in all of its large terminals minutely charted, with the result that it has greatly increased the number of cars handled per yard engine hour. Many other roads are working along the same lines.

One invariable and immediate result of scheduling terminal work is to reduce the number of yard engines used. This follows the studying and planning of the work when every engine is assigned a definite task and a definite time. This automatically reduces lost motion.

Long Runs Without Switching

There is one more of the many fields to which system should be applied and that is, the make up of trains to reduce intermediate handling. The same railroad that charts its switch engines, classifies its west bound trains in a yard near its eastern terminus, so that a large number of trains go through to the distant terminals without breaking bulk and in many cases without leaving the main track. All roads can do more or less of this, and the rewards are attractive.

Scheduling freight transportation makes for order and regularity and regularity soon grows into routine and routine into quantity production. This is followed by improved service, quickened dispatch, larger volume, clearing up of congestions, increased earnings and reduced cost. There are a number of single track roads handling on schedules a volume of traffic that would block them without this orderliness. With schedules they get increased engine and car miles and increased volume. Regularity pleases the patron and furnishes your traffic department with its strongest soliciting card. It also pleases the men and their families who soon learn when they will be at home and when they will go out; and they arrange their rest, their recreation and their meals and pack their buckets accordingly.

Cost Accounting

Adequate, accurate and timely information on the cost of everything that enters into conducting transportation is of fundamental importance. Like system, the extent to which cost accounting can be applied profitably is beyond the limits of a magazine article, but without this accounting, intelligent supervision and the best results are impossible.

Most of the information necessary to this accounting is now being compiled on all railroads and the expense of making it available to the officers who control the expenditure is not great.

First, the charges must be allocated to the division so that responsibility can be fixed, and every item shown separately and in detail. For example, telephone charges are generally lumped, which fails to meet the requirements. Instead, the charges for each station, each office and each house phone—when house phones are furnished—must be shown. The same detail must be supplied for other general accounts, such as supplies and printing. Show in detail what was furnished to each office, each caboose, each engine and each section, separately. Get this information to the division monthly and as soon after the end of the month as possible. Then call a staff meeting to include everyone who has anything to do with the expenditures to discuss the extent and necessity of the expense. It is not necessary to make an agent explain why he needed two brooms, or the superintendent's chief clerk explain why his order for stationery was large, or the trainmaster explain the size of his house telephone bill; the fact that these expenses are being scrutinized and discussed in meeting always brings them down and the monthly meetings can soon be changed to quarterly ones. Comparisons with the preceding month and with the corresponding month of the preceding year are valuable and desirable.

Other Reports Needed

In addition to the monthly reports, there is a large amount of current information which should reach the interested officers not more than three days after the expenditure. These include the following:

A close estimate of the division payrolls.

The number of cars loaded on the division and received from connections, both connecting divisions and connecting lines. This is the best barometer of earnings.

The freight train cost per 1,000 gross ton miles for wages and fuel, divided between through and local service and to include road trains, yard engines and helper service. This is being compiled by many roads and furnishes the best medium for locating costly and superfluous train service and can also be used to allocate the service performed by each engine, engineer and conductor.

The number of cars handled at each terminal per switch engine hour, and the total daily cost of the terminal.

The total number of engines dispatched by each roundhouse daily and the cost per engine.

A daily statement of the overtime made by each department.

Given this data, the superintendent should know where he stands and be in a position to eliminate waste, improve the service and meet conditions as they arise and get results.

In conclusion let me say that, while these are but a few, a very few, of the many ways for controlling transportation expenses, known to all railroad men, the time seems opportune to recall them; and any management that consistently enforces a reasonable number of these old and proved methods, will make the most refractory transportation ratio sit up and take notice.

THE RED CROSS instruction car, operated by the American Red Cross First Aid Service, under charge of Major N. J. Shields, is now being run over the lines of the Baltimore & Ohio under an itinerary which calls for stops of one, two or three days at about 50 places, between July 21 and December 21. The car contains a lecture room, seating 50 persons, and lectures on first aid will be given to railroad employees, industrial workers, boy scouts and others at the different cities and towns visited. The car is so equipped that it can be converted into a hospital, to accommodate 30 patients. The circular of the Baltimore & Ohio, announcing the beginning of this lecture tour, says that the plans of the Red Cross include a similar trip over the lines of the Illinois Central, and subsequently on other roads.

Freight Car Loading Again Breaks Record

A NEW HIGH RECORD for all time in the number of freight cars loaded with revenue freight was established during the week which ended on July 21. The total for the week was 1,028,927 cars, according to the compilation of the Car Service Division of the American Railway Association. This exceeded by 7,157 cars the previous record week, which was that of June 30 this year, when 1,021,770 cars were loaded. This also was the seventh week this year that loadings have exceeded the million car mark.

The total for the week of July 21 was also the third time this year that freight loadings have exceeded the record which was established during the week of October 14, 1920, when 1,018,539 cars were loaded. This record up to that time had never before been approached and remained the high mark until this year.

Freight loadings for the week of July 21 this year also exceeded the corresponding week last year by 183,379 cars and the corresponding week in 1921 by 240,893 cars. It also exceeded by a wide margin the corresponding weeks in 1918, 1919 and 1920.

Compared with the previous week this year, it was an increase of 9,260 cars with increases over the week before being reported in the loading of grain and grain products, coke, forest products, and merchandise and miscellaneous freight, which includes manufactured products.

While the number of cars loaded with revenue freight for the week of July 21 was an increase for the country as a whole of 21.7 per cent over the corresponding week last year, when the miners' strike was in progress, freight loading in the Western district increased only 12½ per cent and in the Southern district 14.1 per cent. The increase in the Eastern district, which includes the Pocahontas district, was 31.7 per cent partly due to curtailment in coal loading last year because of the miners' strike.

At the same time the railroads established a new high record in the number of freight cars loaded, they had 79,710 surplus freight cars in good repair and immediately available for service if necessary, while the reported car shortage amounted only to 7,891.

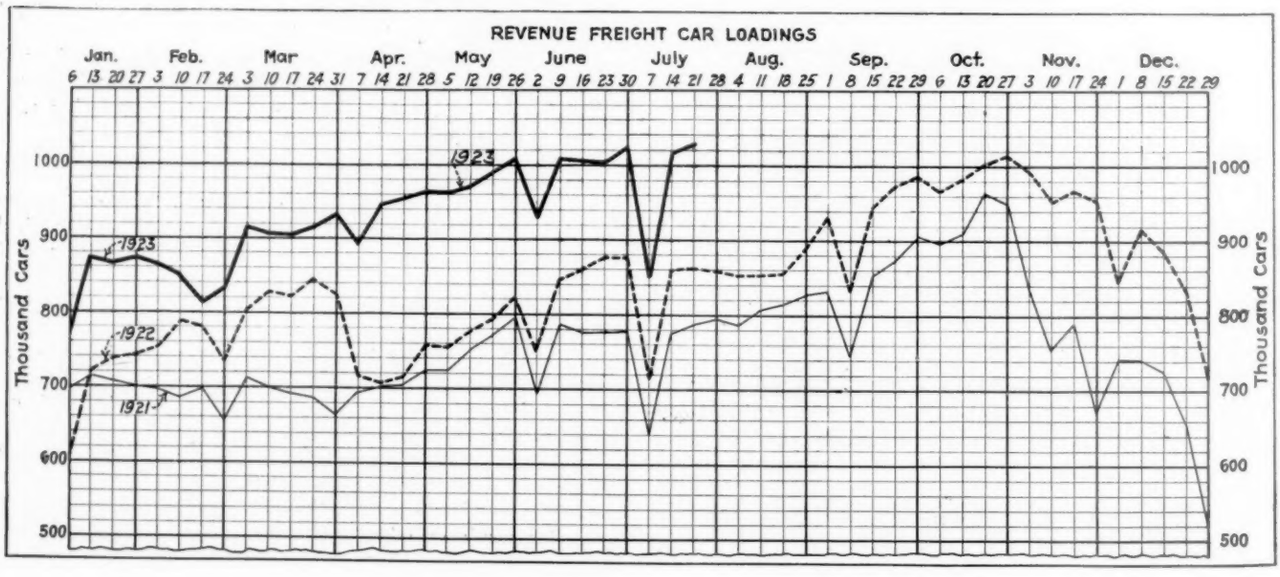
Reports to the Car Service Division show that on July 25 fifty-two of the principal railroads of the country, representing approximately 90 per cent of the mileage of the Class I railroads, moved 952,149 empty and loaded freight cars, the largest number for any one day in the history of the rail-

REVENUE FREIGHT LOADED

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO, WEEK ENDED SATURDAY, JULY 21, 1923

Districts	Year	Grain and grain Products	Live stock	Coal	Coke	Forest Products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded		
											Corresponding period	
										1923	1922	1921
Eastern	1923	8,720	2,934	55,087	3,873	6,640	9,716	66,207	95,081	248,261	.....	.....
	1922	11,628	2,608	8,558	1,874	5,352	8,051	69,639	90,544	.....	198,254	188,937
Allegheny	1923	3,173	2,571	58,686	7,289	3,585	17,945	48,965	85,497	227,631	.....	.....
	1922	4,055	2,431	16,923	4,460	3,119	12,535	49,065	77,286	.....	169,874	156,817
Pocahontas	1923	325	174	28,712	515	2,257	232	6,149	4,876	43,240	.....	.....
	1922	251	176	15,943	230	1,398	25	4,229	3,771	.....	26,023	30,703
Southern	1923	4,137	2,205	21,371	1,798	23,073	1,603	37,435	38,069	129,601	.....	.....
	1922	4,875	2,158	14,963	862	18,366	1,093	35,878	35,389	.....	113,584	109,447
Northwestern	1923	9,342	9,281	9,832	1,026	19,618	51,484	31,018	38,669	170,270	.....	.....
	1922	11,640	8,075	8,170	1,517	15,240	40,266	30,244	36,468	.....	154,020	117,482
Centralwestern	1923	14,822	11,859	12,780	391	12,527	2,933	35,563	57,250	148,025	.....	.....
	1922	18,254	9,531	4,936	422	8,048	2,361	35,112	49,986	.....	128,650	121,525
Southwestern	1923	5,756	3,430	4,320	166	8,108	394	14,845	24,880	61,899	.....	.....
	1922	6,484	2,402	2,927	173	6,638	408	13,687	22,424	.....	55,143	63,123
Total West. dists.	1923	29,920	24,570	26,932	1,583	40,253	54,811	81,426	120,699	380,194	.....	.....
	1922	36,378	20,008	16,033	2,512	29,926	43,033	79,043	110,878	.....	337,813	302,130
Total all roads	1923	46,275	32,454	190,788	14,888	75,808	84,307	240,182	344,225	1,028,927	.....	.....
	1922	57,187	27,381	72,420	9,938	58,161	64,739	237,854	317,868	.....	845,548	.....
	1921	64,715	24,256	149,805	3,770	43,058	33,607	212,212	256,611	.....	.....	788,034
Increase compared	1922	.....	5,073	118,368	4,950	17,647	19,568	2,328	26,357	183,379	.....	.....
Decrease compared	1922	18,912	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Increase compared	1921	.....	8,198	40,983	11,118	32,750	50,700	27,970	87,614	240,893	.....	.....
Decrease compared	1921	18,440	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
July 21	1923	46,275	32,454	190,788	14,888	75,808	84,307	240,182	344,235	1,028,927	845,548	788,034
July 14	1923	40,415	32,726	193,831	14,515	71,768	89,298	240,707	336,407	1,019,667	850,677	774,884
July 7	1923	31,069	25,122	160,218	13,770	54,176	73,596	209,480	287,317	854,748	707,025	640,535
June 30	1923	37,127	30,679	185,757	14,745	79,249	80,791	244,921	348,501	1,021,770	862,845	776,079
June 23	1923	33,958	29,251	143,350	14,828	780,068	82,041	240,403	340,841	1,002,740	866,321	775,447

Compiled by Car Service Division, American Railway Association.



roads. The previous record was established on October 28, 1920, at which time 947,098 freight cars were moved.

Loading of merchandise and miscellaneous freight for the week of July 21 was 584,407 cars, an increase of 7,293 over the week before. Compared with the corresponding week last year, this was an increase of 28,665 cars, and with the corresponding week in 1921, it was an increase of 115,584. Loading of grain and grain products totaled 46,275 cars, 5,860 cars above the week before but a decrease of 10,912 cars under the same week last year. This also was a decrease of 18,440 under the same week two years ago.

Live stock loading totaled 32,454 cars, 272 under the preceding week but an increase of 5,073 cars over the corresponding week in 1922, and an increase of 8,198 cars over the corresponding week in 1921. Coal loading totaled 190,788 cars. While this was a decrease of 3,043 cars under the week before, it was an increase, owing to the miners' strike which was in progress this time last year, of 118,368 cars over the same week one year ago and an increase of 40,983 cars over the same week in 1921. Loading of forest products amount to 75,808 cars. This was not only an increase of 4,040 cars over the week before but was an increase of 17,647 cars over the corresponding week last year and an increase of 32,750 cars over the corresponding week two years ago. Ore loading totaled 84,307 cars, 4,991 cars in excess of the preceding week. This also was an increase of 19,568 cars over the same week last year and an increase of 50,700 cars over the same week two years ago. Coke loading totaled 14,888 cars, 373 above the week before and 4,950 cars above the same week last year. It also was an increase of 11,118 cars over the same week two years ago.

Compared by districts, increases over the week before in the total loading of all commodities were reported in the Eastern, Allegheny, Central Western and Southwestern districts, while decreases were reported in the Pocahontas, Southern and Northwestern districts. All districts, however, reported increases over the corresponding week last year, while all except the Southwestern reported increases over the corresponding week in 1921.

Labor Board Split Over Orient Wage Decision

A SERIOUS breach in the friendly relations of the members of the Railroad Labor Board has developed as the result of a decision ordering the return of the rates of pay in effect on March 1, 1920, prior to the application of decision No. 2, to the train service, clerical and maintenance of way employees on the Kansas City, Mexico & Orient. A. O. Wharton and E. S. Grable, members of the labor group of the board, filed a dissenting opinion to the decision, condemning the procedure and virulently attacking B. W. Hooper, chairman of the board, and Judge R. M. Barton, another member of the public group.

In its opinion on the case, the majority of the board said:

"The carrier takes the position that it has never in any yearly period earned enough money to pay its operating expenses and properly maintain its property and that since September 1, 1920, its operating deficit has been paid with money loaned by the Interstate Commerce Commission. Further, that the road is largely dependent upon traffic secured from sparsely settled and undeveloped territories largely devoted to agriculture and stock raising.

"The exhibits filed by the carrier show that, generally speaking, traffic is at a low ebb due to commercial inactivity in the territories it serves; that the train service provided is only that necessary to meet actual needs and the requirements of the state public service commissions which exercise jurisdiction and that the property is being economically administered so far as may possibly be done under existing conditions. It is a matter of common knowledge that in the territories served by this carrier, cost of living is not comparable with that in large centers and worthy of note that few of the employees here involved are required to live in large centers.

"The board is sympathetic with the principle 'the ability of the carrier to pay' is not a controlling factor in fixing wages but recognizes that it is entitled to secondary consideration with a certain type of carrier which is dependent almost entirely upon local business or whose principal function in the final analysis is the development and upbuilding of a new or comparatively new country. This decision is responsive to a local condition existing on this carrier which the board hopes may be only temporary."

In the dissenting opinion filed by Mr. Wharton and Mr. Grable the principle of the "inability of the carrier to pay" as a factor in fixing the wage rates, was condemned unequivocally. The personal element was injected into the dissenting opinion in the following paragraph:

"The chairman of the board (Mr. Hooper) and Judge Barton, in referring to the attitude of the employees in a manner peculiarly their own without foundation and fact, said in effect 'that the employees had admitted that a reduction should be made.' These members of the board placing such an interpretation on the statement of the employees, in the opinion of the undersigned, indicates incapability of understanding the value placed upon trade union ethics by bona fide trade unions, and probably in this main disability may be found the answer to the suspension of work on July 1, 1922, by the shopmen and others which resulted in the loss of hundreds of millions of dollars to the carriers, employees and the public."

In a statement supporting the decision, the majority members replied with equal force to the accusation of the two labor members of the board. Their statement reads in part as follows:

"The dissenting opinion declares that the trade union ethics involved in the course thus pursued by the representatives of the employees (referring to the refusal of the brotherhoods to settle with the Orient on account of its declining to negotiate with the Federated Shop Crafts after the failure of the strike last summer) are beyond the understanding of certain of those voting for this decision. In this the dissenter is mistaken. Trade union ethics cannot be different from the ethics of other people and other organizations. They embody the same principles of right and wrong and cannot embrace the idea that the end justifies the means.

"The policy of the employees was not one of ethics but one of organization tactics and of this, no criticism is here offered. It is only necessary to observe that the motive which led them to refuse to agree to a reduction of wages, namely, the failure of the carrier to take back the striking shopmen, is not one that should influence the action of members of this board in passing on the merits of this case.

"It would seem, however, from the virulent nature of the dissenting opinion, that its writer has momentarily lost sight of the fact that he is no longer the head of the striking shopmen but is now a sworn member of a public tribunal designed to protect the people from the sinister effect of railway strikes. It is regrettable that a member of the board, whatever his personal interests or habitual bias, cannot dissent from the action of the majority without attacking their personalities as well as their opinions. It is ominously detrimental to the public welfare and to the good of the employees themselves to continually promulgate the false doctrine that the Railroad Labor Board and all other courts and tribunals are unfair and unjust to labor.

"The writer of this supporting opinion (Mr. Hooper) is not abashed or confounded by having his name and his vote pointed out in the dissenting opinion whatever he may think

of the propriety of the performance. It would really be beneficial to the railroad employees if they were permitted to know all the votes of the board rather than to have them deceived by propaganda to the effect that only the labor representatives of the board are free from bias and partiality and that all others are blind to justice.

"This decision undertakes to fix wages that are just and reasonable. It does not proceed upon the theory that the employees must exclusively bear the burden of keeping this railroad in operation. It recognizes the fact that the capable and well informed representatives of the employees themselves have in effect conceded that a reduction is necessary, even if they did block it by interposing an extraneous petition. It does not reduce the wages of the employees below the standard of decent living. It does reduce them to somewhat below the rates paid on the great railroads of the United States. In doing this, however, the Railroad Labor Board knows that there is now a generous margin between the wages paid railway employees and the line of their necessity."

The furore which this decision has created in the labor board headquarters, it is thought, will irrevocably widen the breach between the labor members and the public and railroad representatives of the board. Mr. Wharton has from the first been the outstanding champion of the labor organizations and has never failed to exert his full efforts to secure decisions favorable to the unions without regard to the merits of the cases. For some time he was compelled to act almost alone, but since the appointment to the labor board of Mr. Grable, he has found a steadfast supporter.

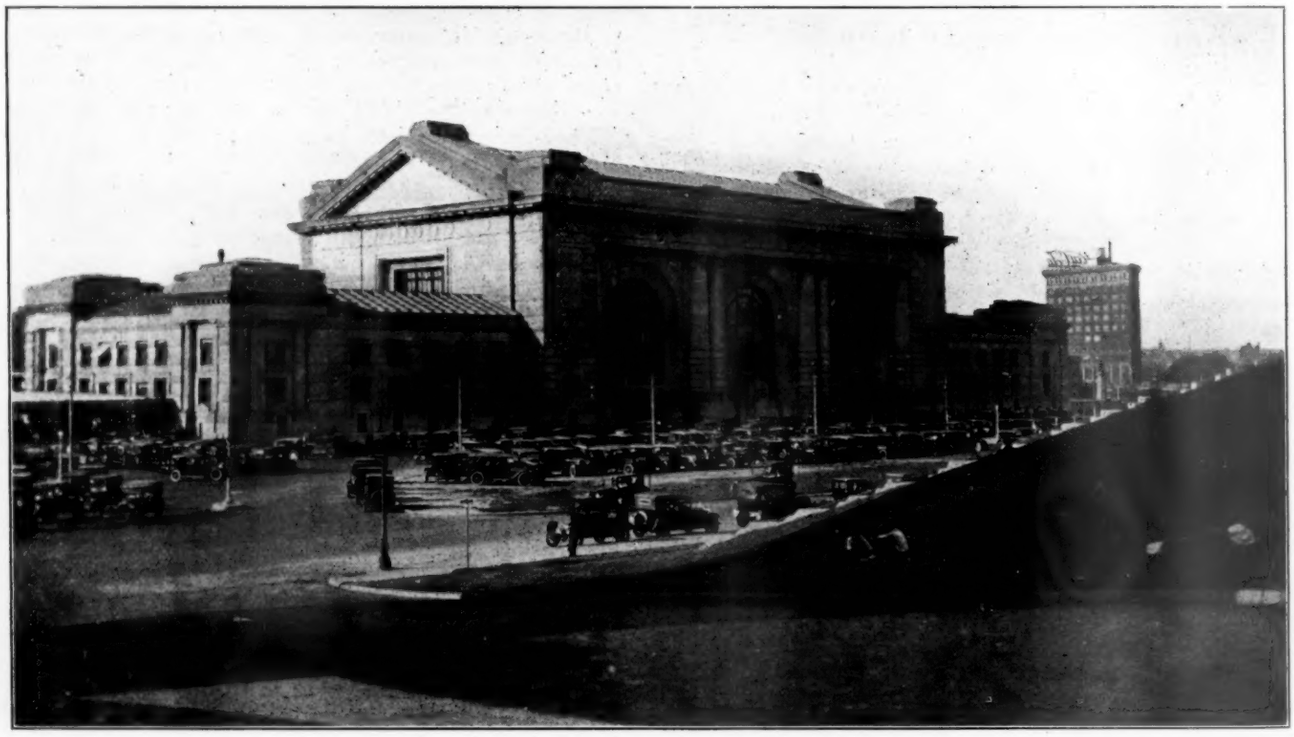
The first evidence of an open breach came with the election of a chairman last spring when the labor members of the board strongly promoted the election of Mr. Hanger, a member of the public group but with labor inclinations. Although this attempt failed, it did not tend to promote amicability among the members. Mr. Wharton has previously hinted at personalities in his numerous dissenting opinions, but this instance is the first in which an outright personal attack has been made.

In a decision published July 26, increases averaging three cents an hour were granted by the Railroad Labor Board to 80,000 clerical employees of the American Railway Express and the Southeastern Express companies. The request made to the board in this case were for increases ranging from 10 to 15 cents an hour. These employees are represented by the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees. Mechanics, helpers, apprentices and car cleaners on the New York Central have been granted an increase of three cents an hour. A wage advance of $4.10 a month for stationary engineers and firemen on Long Island has been approved. The Buffalo, Rochester & Pittsburgh has granted wage increases of from one to three cents an hour for its clerical and station forces represented by the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees.

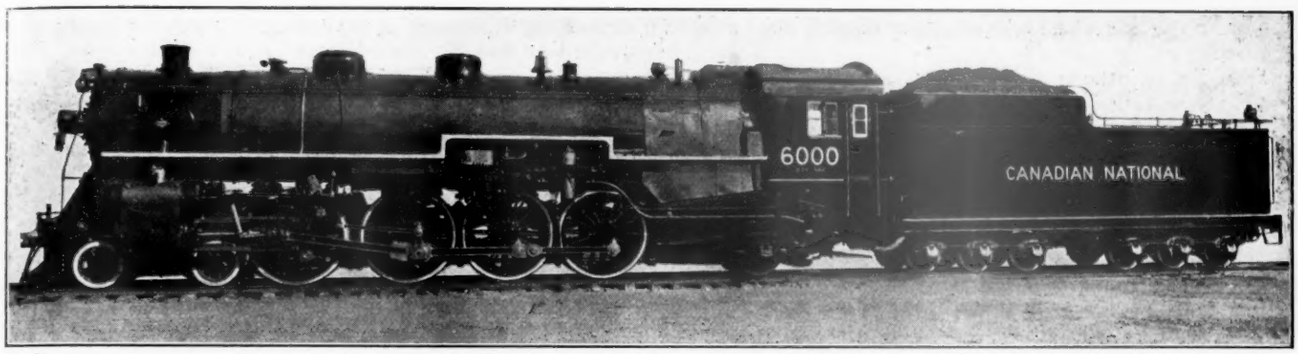
Shopmen on the Chicago, St. Paul, Minneapolis & Omaha, including all machinists, boilermakers, blacksmiths, sheet metal workers, electricians, carmen, their apprentices and helpers, and car cleaners, have been granted an increase of two cents an hour effective on July 1. Approximately 2,400 employees are involved in the increase, which amounts annually to $121,000.

The plea of the telegraphers on some 30 railroads for large increases in wages varying in amount on the different roads, was considered by the labor board on July 28. The telegraphers were represented by E. J. Manion, president of the Order of Railroad Telegraphers. The demands of the labor organization varied on nearly every road and were for wage increases on some and changes in working rules on others. Representatives of the roads called attention to the settlements which have been made and asked that the dispute be remanded to be handled individually by the various carriers.

The Delaware & Hudson has made a general increase of two cents an hour in the wages of mechanics and laborers at the shops at Carbondale, Pa., the increase being retroactive to July 16.



A Recent Photograph of the Kansas City Union Station



The Largest Passenger Locomotive in Canada

Canadian National Mountain Type Locomotive

Increasingly Heavy Passenger Traffic Requires Adoption of 4-8-2 Type Locomotives for Eastern Canada

By C. E. Brooks
Chief of Motive Power, Canadian National Railways

PROMINENT among the locomotives which the Canadian National Railways are acquiring during 1923, are the 16 Mountain type being built by the Canadian Locomotive Company, Kingston, Ontario. A large number of the details used in the construction of these locomotives are of Canadian National Railways standard design and common to all their large modern power. However, there are many new features necessarily introduced in the building of a new type with the dimensions and power of the Mountain type.

These locomotives are known on the Canadian National as the U-1-a class, road Nos. 6000 to 6015. They have a total weight (without tender) of 339,000 lb., the weight on the drivers being 226,770 lb. The tractive power is 49,600 lb. and the factor of adhesion is, therefore, 4.5. The cylinders are 26-in. diameter by 30-in. stroke and the driving wheels, 73 in. in diameter.

Features of the Boiler and Attachments

The boiler, which carries 210 lb. pressure, is of the straight-top radial-stayed type with a conical bottom, the largest course being 90 in. in diameter. The firebox is 48¼ in. by 114⅛ in. inside, and the combustion chamber is 48½ in. long. The boiler horsepower is 96.4 per cent of the cylinder horsepower.

There are 188, 2¼-in. tubes and 40, 5½-in. flues, 22 ft. 3 in. long, the flues being electric welded into the back tube sheet as per Canadian National standard.

A feature of Canadian National practice in crown staying, which has been followed on these boilers, is the alternation of successive groups of four transverse rows of crown stays; i.e., four rows of button head crown stays are succeeded by four rows of plain heads and so on alternately. This arrangement provides against the possibility of a boiler explosion in the event of a burnt crown sheet, by reason of the sheet giving first at a point where stayed with plain head stays and pulling down over some of these stays, at the same time being held on either side by the button head stays, the pressure being relieved through the holes where the sheet comes over the plain heads.

In view of the size of these locomotives and in order to take advantage of every means for efficient operation, they have been equipped with mechanical stokers and feedwater heaters, the boiler feed apparatus on the left hand side consisting of a pump in connection with the feed water heater and on the right-hand side a Hancock type EA lifting injector of 3,500 gal. capacity. The grates are of Canadian National standard design, the rocking grate bars being of cast steel and operated by Franklin power grate shakers.

The superheater used is the Robinson, one of the standard superheaters in England, but comparatively new on Canadian roads. It embodies many interesting features, prominent among these being the maintaining of steam in the superheater units at all times, this being calculated to lengthen the life of the units.

The ash pans are of the Canadian National standard hopper type, the location of the door hinges being such that the doors close of their own weight. An attachment, which is Canadian National standard practice and is known as the ash pan sludge, is worthy of note. This consists of an 1¼-in. pipe from the delivery pipe of the injector to the ash pans, with a valve operated from the cab, and a branch extending into each hopper. The arrangement is specially valuable as it permits the direction of hot water into the ash pans to throw them out when the locomotive arrives at a terminal in freezing weather with pans partly filled.

Engine and Running Gear

The frames, with a single forward section, are of carbon steel thoroughly annealed, rigidly braced with cast steel crossties and fitted with taper bolts throughout. The rear end is fitted with a Commonwealth cast steel cradle casting.

The equalizing system is of the usual type, the engine truck forming one system of equalization while the four driving wheels on each side are equalized with the trailing truck, thus forming the other two systems, this arrangement giving a three point suspension. The equalization places approximately 57,300 lb. on the engine truck, 226,770 lb. on the drivers and 54,930 lb. on the trailing truck.

The driving wheels are 73 in. in diameter with 66 in. centers of cast steel. The axles are 10 in. diameter at the journals except the main journals which are 12 in. diameter, and due to weight consideration and in keeping with modern practice, are hollow bored.

The driving boxes are of cast steel with bronze bearings and those for the front pair of drivers are of the Franklin lateral motion type, designed to compensate when taking

curves for the long wheel base necessary on such large modern engines.

Franklin adjustable driving box wedges and Franklin hard grease cellars are used throughout. A comparatively new feature in connection with the driving boxes and worthy of particular mention, is the application of the Franklin driving box spreader. This is a permanent casting fixed at the bottom of the box, prevents any spring to the sides of the box and makes the removal and repacking of grease cellars a simple, as well as a quick operation.

The crosshead is fitted with the Rogatchoff adjustment, a feature which permits the adjustment of the shoes to take up the wear.

The crosshead guides and piston rods are of such length that the piston may be carried out clear of the front cylinder head without disconnecting the piston rod from the crosshead.

The engine truck is of the Commonwealth constant-resistance, four-wheel type, equipped with Preston hub slip liners and Armstrong oilers. The wheels are 34¼ in. diameter and have spoked steel centers 28 in. diameter, common to all Canadian National modern passenger locomotives.

The trailing truck is also of the Commonwealth constant-resistance type with 43-in. diameter wheels and 36-in. cast steel wheel centers.

Steam distribution is provided for by Walschaert valve gear of modern design. The diameter of the piston valve is 14 in. and the valve setting is as follows: Travel, 6½ in.; lap, 1⅛ in.; lead, ¼ in.; exhaust clearance, ¼ in.

The cylinders follow Canadian National standard design, being equipped with railway standard by-pass valves and four standard cylinder cocks to each cylinder, two being placed at the center of the barrel and connected with a drain pipe from the bottom of the steam chest, this pipe being covered by the cylinder jacket, the other two cocks being piped to the exhaust cavities which are drained from each quarter. All eight cylinder cocks are operated in unison by one set of levers. The cylinders also are equipped with railway standard relief valves. The bottom of the cylinder casting is arranged so that the engine truck center plate is checked into same, thereby affording ample provision to withstand the thrust which this part is subjected to.

Cab and Piping Arrangement

The cab is of the railway company's standard short vestibule type. This type of cab makes it possible to have almost all the short stays in the sides of the firebox out clear of the cab, the few that remain inside all being F.B.C. flexibles.

Great care has been given to the piping layout and, as far as practical, it was laid out in the drawing room in advance of construction. The cast steel turret with eight outlets has been placed outside and 25 in. ahead of the cab, affording ample room for packing the operating valves which are all of one standard design. Six operating valves enter the turret horizontally from the rear with the valve seats and steam connections at the front, these connections being fitted with a coupling nut and a tail piece tapped to suit the several pipe sizes, thereby permitting the use of one size standard operating valve. These operating valves are fitted with extension handles carried into the cab and labeled. One feature of the valves and seats is that none of them are threaded into the turret, each one being secured with a cast steel flange and four studs tapped into the turret walls, bosses being provided inside the turret so that studs do not go all the way through. This eliminates leaky threads in the turret as well as simplifying the removal of the valves when necessary. Not only has the turret been placed outside the cab, but the injector and stoker engine valves as well, these being attached to the ends of the turret. This arrangement renders the valves more accessible for packing and removes the great danger of scalding in case of a side-swipe or similar accident that would tend to burst a steam pipe inside the cab.

Other Features

The sand box is fitted with Hanlon sanders. World type safety valves are used, three in number, one muffled and two plain. The headlight equipment consists of a Pyle-National type K-2 turbo generator set and Keystone type No. 1412 cage, fitted with a 14-in. Golden Glow reflector and C.M.S. focusing device, the cage body being No. 16 gage copper. Canadian National standard separate number lamp case with sides oblique is used, this making for the maximum safety in operation by reason of the easier and more certain identification of locomotive numbers. The water level indication is procured by the most modern method and consists of the Canadian National standard water column welded directly to the back head of the boiler and fitted with the railway standard try cocks and water glass fittings, the water glass being fitted with a special guard. The steam heat reducing valve is of the World-Leslie type and the piston and valve rod packing is King metallic. The Franklin radial buffer and unit safety bar are used between engine and tender and between engine and tender on the steam heat line, Barco flexible joints are used.

The air brakes are Westinghouse No. 6 E.T. with 8½-in. cross compound air compressor and S-5 governor. There are three main reservoirs, two on the right side and one on the left side with a total capacity of over 90,000 cu. in. The radiating pipe connecting reservoirs and compressor is so arranged as not to be visible, and is supported by cast-iron brackets under the running boards. This radiating feature has been of good service in overcoming condensation and consequent freezing during low temperatures. The air brake

CANADIAN NATIONAL MOUNTAIN TYPE LOCOMOTIVE

TABLE OF DIMENSIONS, WEIGHTS AND PROPORTIONS

Railroad	Canadian National
Builder	Canadian Locomotive Company
Type of locomotive	4-8-2
Service	Passenger
Cylinders, diameter and stroke	26 in. by 30 in.
Valve gear, type	Walschaert
Valves, piston type, size	14 in.
Weights in working order:	
On drivers	226,770 lb.
On front truck	57,300 lb.
On trailing truck	54,930 lb.
Total engine	339,000 lb.
Tender	238,000 lb.
Wheel bases:	
Driving	19 ft. 6 in.
Rigid	12 ft. 8 in.
Total engine	41 ft. 9 in.
Total engine and tender	79 ft. 1¾ in.
Driving wheels, diameter outside tires	73 in.
Boiler:	
Type	Straight top
Steam pressure	210 lb.
Fuel	Bitum. coal
Diameter, first ring, inside	80⅞ in.
Firebox, length and width	114⅛ in. by 84¼ in.
Tubes, number and diameter	188—2¼ in.
Flues, number and diameter	40—5½ in.
Length over tube sheets	22 ft. 3 in.
Grate area	66.7 sq. ft.
Heating surfaces:	
Firebox, comb. chamber and arch tubes	348 sq. ft.
Tubes and flues	3,731 sq. ft.
Total evaporative	4,079 sq. ft.
Superheating	810 sq. ft.
Comb. evaporative and superheating	4,889 sq. ft.
Tender:	
Water capacity	10,000 Imp. gal.
Fuel capacity	17 tons
General data estimated:	
Rated tractive force, 85 per cent	49,600 lb.
Cylinder horsepower (Cole)	2,556 hp.
Boiler horsepower (Cole) (est.)	2,470 hp.
Weight proportions:	
Weight on drivers ÷ total weight engine, per cent	66.9 lb.
Weight on drivers ÷ tractive force	4.5 lb.
Total weight engine ÷ cylinder hp	128.6 lb.
Boiler proportions:	
Boiler hp. ÷ cylinder hp., per cent	96.6
Comb. heat surface ÷ cylinder hp	1.91
Tractive force ÷ comb. heat. surface	10.13
Tractive force × dia. drivers ÷ comb. heat. surface	740
Cylinder hp. ÷ grate area	38.3

piping on these locomotives has been given careful study which has resulted in a piping layout that is easy of access and of a neat appearance.

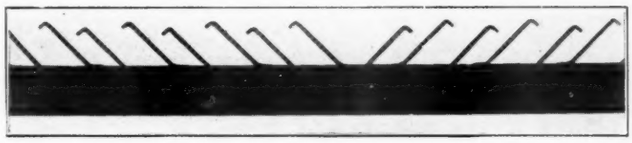
Tender Design

The tank is of the water bottom type of Canadian National standard design and construction, somewhat modified for the application of the Duplex mechanical stoker. The tank has a water capacity of 10,000 Imperial gallons and a coal capacity of 17 tons. The tender frame is of the Commonwealth cast steel type. Commonwealth six-wheel tender trucks are used, with 5½ in. by 10 in. journals. Flat side bearings are used, placed 52 in. apart both front and back.

The important dimensions, weights and proportions of these locomotives are shown in the accompanying table.

I-Beam Construction Facilitates Concrete Slab Work

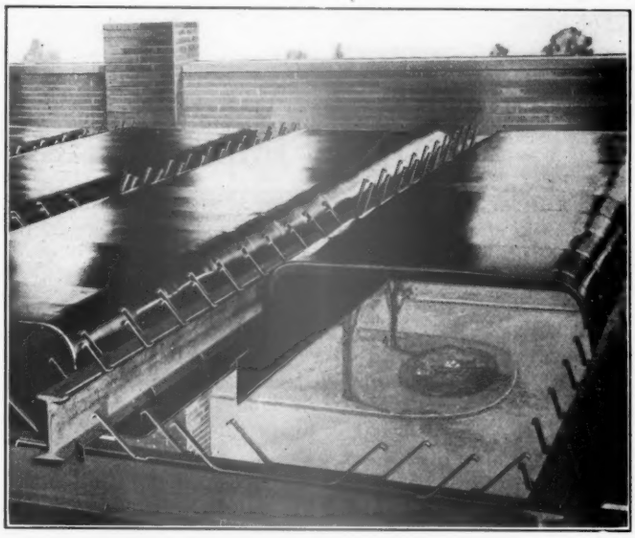
A NEW FORM of reinforced concrete slab construction for use in buildings merits attention because its use serves to eliminate nearly all form work. The application of a special type of I-beam construction provides the principal support for the form while the concrete is being placed and curing and also serves as the principal reinforcement in the concrete girders and beams. This system of reinforced concrete construction is being developed by the Truscon Steel Company, Youngstown, Ohio, and comprises a further



The New Truscon I-Beam

adaptation of the system of concrete reinforcement originally developed by that company. The system also includes the use of removable steel forms suspended from the I-beam construction.

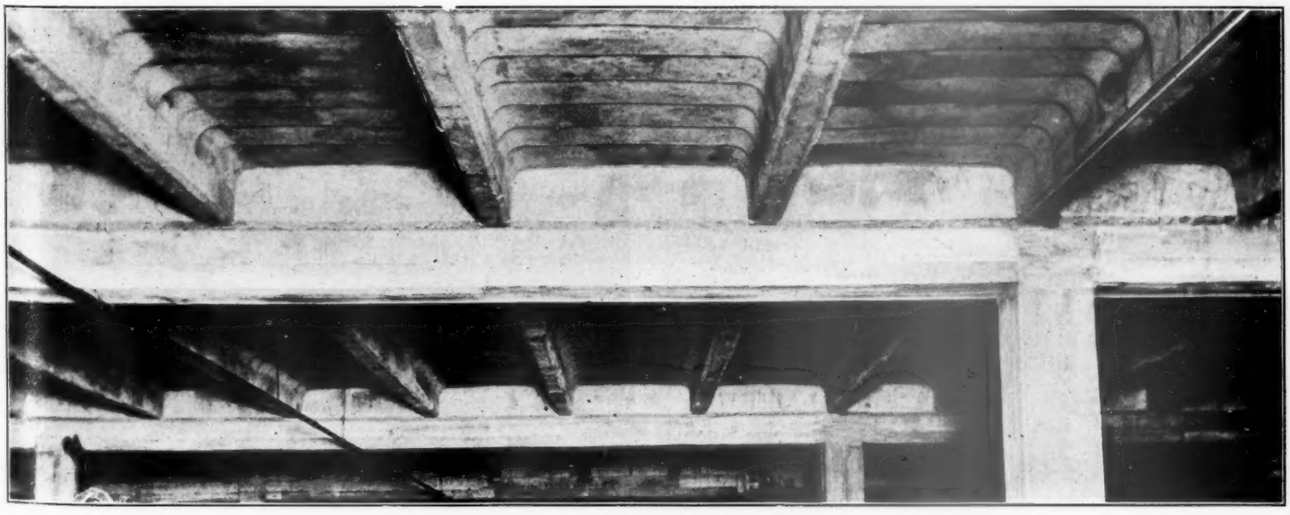
As shown in the diagrams and other illustrations the principal reinforcement of the beams and slabs consists of an I-beam having the outer edges of the top flange sheared and bent up in the same general manner followed in the rib bars forming a basic feature of Truscon reinforcement systems. This serve as the reinforcement in a concrete beam having considerable greater depth than that of the steel I-beam incorporated in it. These I-beams are available in five different sizes, namely, 4 in., 5 in., 6 in., 7 in., and 8 in. They may be used in a variety of combinations. Thus the beams may be entirely enclosed in the stem of a reinforced concrete T-construction or they may be entirely exposed with only the bent up ribs of the upper flange incased in the concrete. In other cases it may be desirable to supplement the reinforcement afforded by the cross sectional area of the beam with additional bars placed on either side of it. The advantage of this construction from the standpoint of the concreting is that the I-beams provided as reinforcement are



Truscon I-Construction Before Concreting, Showing New I-Beams for Beams and Girders

normally adequate to support the form work and the concrete. Usually only a single post is placed in the mid-span of each beam to serve as a shore. The form work may consist of special steel forms in the shape of an inverted U to form both the sides of the beams and the underside of the slabs or they may be the Truscon steel floretyles which serve the same purpose but are designed to remain in place as a permanent sheathing for the underside of the floor construction.

An elaborate series of tests has been conducted for the



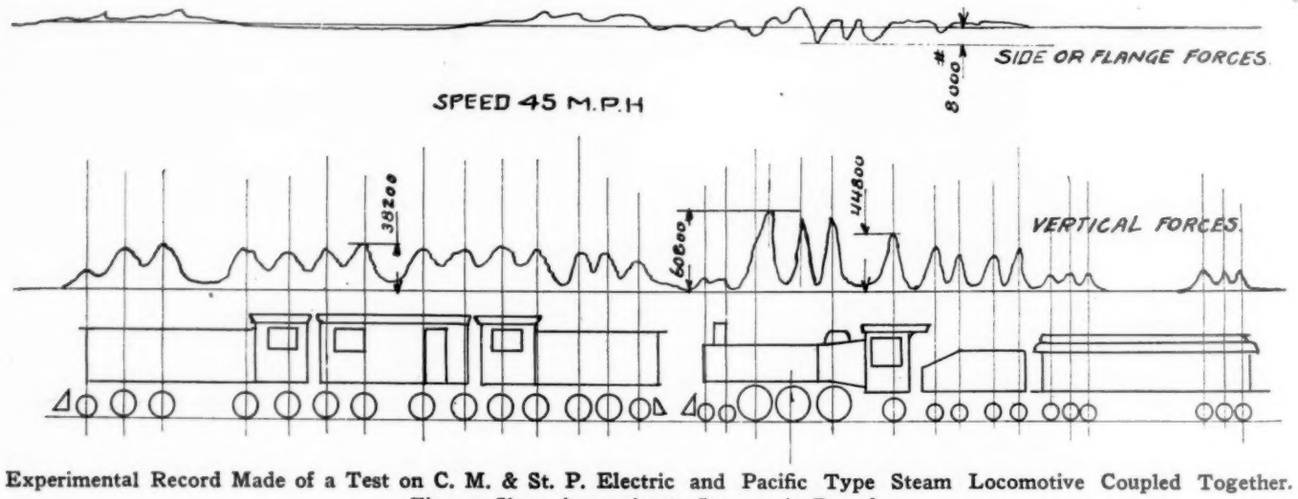
Finished Form of I-Construction in a Warehouse

purpose of ascertaining the property of this form of reinforcement and a legitimate method of carrying out the design calculations. These tests show that designs based on the assumption of the steel in the I-beam concentrated at the neutral axis of the I-beam, are well on the side of safety. The tests also showed that owing to the flextural strength of the I-beams independent of the concrete, the ultimate failure of the slabs under test took place much more gradually than is normally the case in the destruction of reinforced concrete slabs and beams reinforced with bars only. Bending tests made with beams in which only the web bars of the I-beams were encased in the concrete, discloses the high value of the resistance against longitudinal shear along the plane of contact between the bottom of the concrete and the top face of the upper flange of the I-beam.

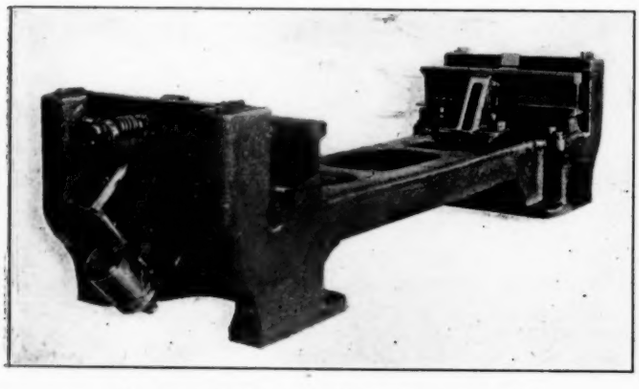
Determining the Amount of Wheel Impact on Rail

AN INTERESTING DEVICE known as an otheograph which is in effect a test tie for measuring simultaneously the vertical and transverse thrust or impact of a wheel on a rail, has been recently developed by the General Electric Company, Schenectady, N. Y., and a number of these ties are being installed on the company's test tracks at Erie, Pa. The instrument shows by graphic records the effect of each separate wheel of a locomotive or car on each of the two rails.

These otheograph ties may be installed in place of the regular ties, either singly or several grouped together on curves or tangent track. Provision is made for the use of two different springs for recording the vertical load, one having a deflection of about ⅛ in. for each 25,000 lb. of axle loading, and the other spring having the same deflection for each 50,000 lb. of axle loading. The springs are designed for a maximum deflection of ⅜ in. The springs for recording the transverse thrust have deflections of about ⅛ in. for each 20,000 lb. The deflection of the spring is recorded through a lever having a ratio of 8 to 1, the record being traced on paper wrapped around a revolving cylinder similar to an engine indicator. The operating mechanism provides for moving the recording cylinders on any number of ties simultaneously so that as many records may be taken of each wheel on each side of the locomotive as there are ties that are grouped together.



Experimental Record Made of a Test on C. M. & St. P. Electric and Pacific Type Steam Locomotive Coupled Together. Figures Show Approximate Stresses in Pounds



A General View of the Otheograph Tie

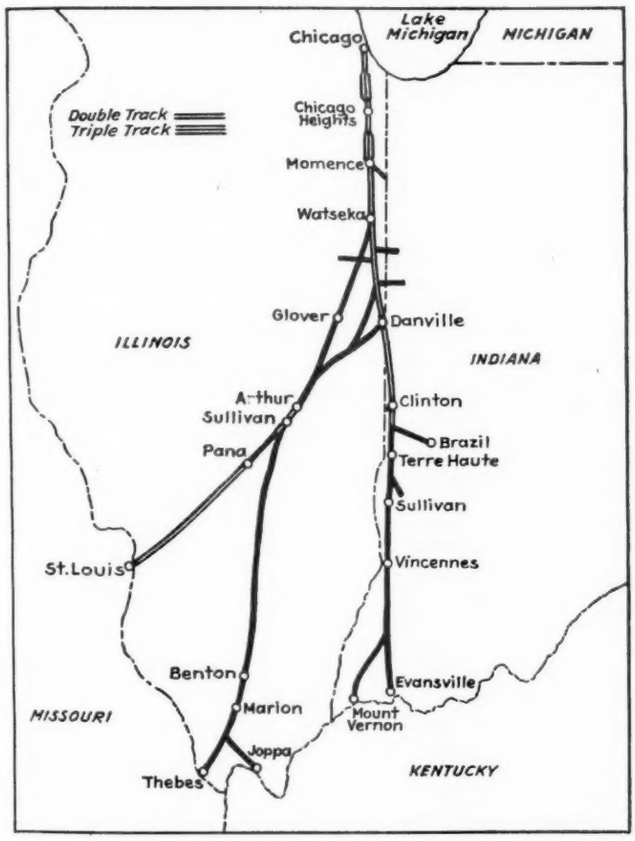
TWENTY-ONE MILES of track and roadbed and some 16 bridges along the line of the Chicago, Burlington & Quincy in northeastern Wyoming have been washed out during the past two weeks by the widespread floods in that territory. In a number of places, fills from 40 ft. to 1,500 ft. in length were entirely swept away. Trains are now running into Thermopolis, Wyo., from the west but none are running between Casper and Thermopolis. It is estimated that it will be at least six weeks before the damage to the track can be repaired and normal traffic restored.

Express Train at Göschenen, Switzerland

Chicago & Eastern Illinois Improving Rapidly

First Year After Reorganization Characterized by Sub-Normal Traffic—Has Strong Cash Position

THE REORGANIZED Chicago & Eastern Illinois took possession of its property and commenced operations on January 1, 1922. The first year of its operations was characterized by a combination of unfortunate features. As a result it would be quite unfair to regard the earnings for the year as typical in any way of what the property might be able to do under more normal conditions and also it would not be desirable to accept results of the first year as a criterion of the reorganization plan by which the receivership was terminated.



The Chicago & Eastern Illinois

Difficulties that confronted the railroad were merely those which confronted practically all of the railway lines of the country except in so far as the Chicago & Eastern Illinois itself may have been affected in greater or less degree than other properties. The early part of 1922 included a continuance of the depression which existed in 1921. The coal strike which began on April 1 lasted until late in August and affected the Chicago & Eastern Illinois particularly, because normally from 55 to 60 per cent of the road's total tonnage is coal and the Chicago & Eastern Illinois' mines are in union districts. The shopmen's strike which began on July 1 presumably did not affect the Chicago & Eastern Illinois in any greater degree than most of its neighbors, although its operations must have been impeded in no small degree by the fact that for a large part of the fall its percentage of locomotives held for repairs requiring over 24 hours ranged from 35 to 38 per cent, and on November 1 went to 43 per cent.

The other factor which affected all railway operations in 1922 was the reduction in freight rates. Whereas the Chicago & Eastern Illinois received an average revenue per ton per mile in 1921 of 1.03 cents, in 1922 its ton mile earnings were 0.98 cents. The 1922 revenue tons and revenue ton-miles were the smallest in the last 10 years. That they were the smallest was, of course, partly due to the fact that the reorganized company operated a smaller mileage and did not include the Chicago & Indiana Coal Railway and the Evansville & Indianapolis. Nevertheless one would not expect favorable gross or net income under the conditions mentioned.

Balance After Charges

In an exhibit which was presented with the reorganization plan when it was made public in the spring of 1921, it was estimated by reputable authority that the Chicago & Eastern Illinois would, under normal conditions, earn a net operating income of $5,300,000 and under the conditions which were to be expected at that time for 1921, the operating income for that year would be approximately $4,100,000. The Chicago & Eastern Illinois had a standard return, for the three test-period years prior to federal control, of not quite $3,000,000, which figure, of course, took into consideration the losses that the company had sustained on the operation of the non-lucrative properties which were severed during the receivership or the reorganization. In 1918, the property earned for the government a net operating income of about $1,500,000. In 1919, it suffered a deficit after rents of about $423,000. In 1920, the net operating income was $2,128,214, and in 1921 the property earned a net operating income of $2,153,582.

It is of particular interest that even with the adverse conditions of 1922, the net after rents for the year, should have been $2,721,469, the nearest approach to the standard return figure of any year since the beginning of federal control. The $5,300,000, which the experts estimated, would have covered the 6 per cent dividends on the preferred stock and disbursements on the common. While the 1922 net fell far short of the figure hoped for at the time the reorganization plan was presented, there is not lacking a certain amount of satisfaction that the figure should have been as good as it was, particularly with the 1922 conditions. At any rate it was sufficient to cover fixed charges handsomely and to allow a balance, after the payment of interest, of $602,676.

Physical Rehabilitation During Receivership

To put it in simplest form, the difficulties which brought about the receivership of the Chicago & Eastern Illinois in 1913, was the policy of the Frisco control whereby dividends on the road's securities were paid at a time when they were not being earned, and a failure to spend proper sums of money for maintenance. As a result of the latter condition, the chief activities of the receiver were devoted to the physical rehabilitation of the plant. This included, principally, improvements to roadway and structures and rehabilitation of equipment. The expenditures which the Chicago & Eastern Illinois has made for new equipment during the past several years have been small. As a matter of fact the road has not acquired any new freight cars since 1913 and the natural result is that its equipment condition at the present time is

not of the best. The number of freight cars in service at the present time is less than it was at the end of 1913, and the same statement applies also to the freight car capacity in tons. The Chicago & Eastern Illinois is, however, fortunate enough to own sufficient equipment so that it always reports a sizeable net credit per diem balance. In 1921 and 1922 the net credit in each year was over $900,000. It is understood, however, that the equipment situation on the road is such that its equipment repair costs are rather high. As to the rehabilitation of the physical plant, during the first eight years of the receivership, that is, up to December 31, 1920, the total rail renewals amounted to 49,445 tons, equivalent to 393 miles, which compared with the figures for the eight years prior to the receivership of 26,048 tons or 192 miles. Cross tie renewals in the eight-year period of the receivership ended December 31, 1920, averaged 375,326 annually, an *increase* of 9.8 per cent over the figure of 341,813 for the eight years prior to the receivership; and these figures do not reflect the fact that practically all tie renewals since 1908 have been of treated ties. During the receivership the management put in a large quantity of stone and chatts ballast, improved the roadbed by ditching, drainage, etc., and spent considerable money on various other improvements, such as shop buildings and related facilities, coaling stations, etc.

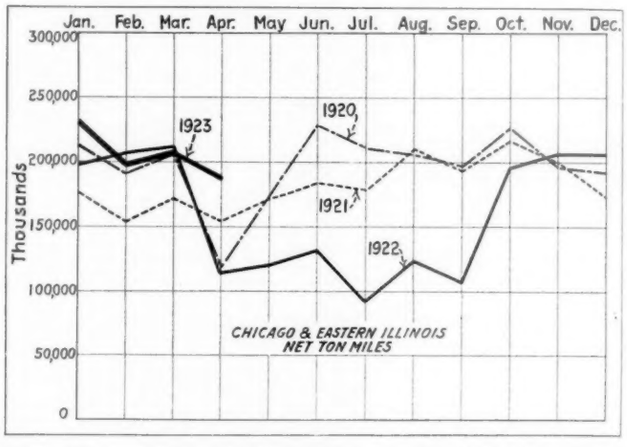
Present Mileage

The Chicago & Eastern Illinois, as at present constituted, operates 945 miles of railroad. The property that went into receivership in 1913 operated 1,275 miles, but in the receivership and in the reorganization two sections were segregated in the form respectively of the Evansville & Indianapolis and the Chicago & Indiana Coal Railway. The Evansville Indianapolis, operating a line from Terre Haute, Ind, to Evansville, with a total mileage of 146, was operated by the Chicago & Eastern Illinois after 1911. It was separated from the Chicago & Eastern Illinois in 1916 upon the appointment of a separate receiver, and in 1920 was acquired by the Big Four. This property paralleled the Chicago & Eastern Illinois main line and was not in good physical condition. The Big Four has spent considerable money, since it has acquired the property, for rehabilitation. The Chicago & Indiana Coal Railway which paralleled the Chicago & Eastern Illinois from Brazil, Ind., northward to approximately opposite Momence, Ill., was not taken over in the reorganization. It had not proved a great asset to the parent company; the Chicago & Eastern Illinois had sustained on its operations losses of about $50,000 a month.

The 945 miles of line operated by the Chicago & Eastern Illinois include the lines from Chicago south to Evansville, with a corollary line to the Mississippi river at Thebes and with an entrance by means of 85 miles of trackage rights to St. Louis. Of the total of 945 miles, 822 are owned and 123 are trackage rights. Of the owned mileage 217 has second track. The predominating traffic of the property is bituminous coal, which is found along almost every section of the Chicago & Eastern Illinois lines. Coal normally constitutes about 55 to 60 per cent of the road's total tonnage. In 1922, in which, of course, the coal traffic was sub-normal, the entire revenue tonnage of the road was divided approximately as follows: Products of agriculture, 9 per cent; products of animals, 1⅓ per cent; products of mines, 60 per cent; products of forests, 9 per cent, and manufactures, miscellaneous and l.c.l., 20 per cent.

The total number of mines served by the road is approximately 80. The most important field served is the Clinton district in the neighborhood of Clinton, Ind. The West Frankfort and Marion, Ill., field ranks second, and considerable coal is received from lines in the neighborhood of Danville, Ill., in the Sullivan county district between Terre Haute and Sullivan and in the neighborhood of Pana, Ill. A large part of the coal moves toward Chicago and thence to markets in the Northwest. A small volume also moves through Arthur, Ill., and thence via the Pennsylvania through Peoria. The lumber business which, as noted above, makes up not quite 10 per cent of the Chicago & Eastern Illinois total revenue tonnage comes to the Chicago & Eastern Illinois via Thebes, being received at that point from the Frisco, Cotton Belt and the Missouri Pacific. There is also a sizeable movement of ties and other lumber up the Ohio river, which traffic the Chicago & Eastern Illinois receives at Joppa.

The Chicago & Eastern Illinois was noted above as having devoted considerable effort during the period of the receivership to roadway and structures rehabilitation. A feature of this work was the installation of heavier rail. At the end of



The Effect of the Coal Strike was Sharply Indicated in C. & E. I. Net Ton Miles

1922, of the road's total track miles of 1,037, 61 miles were laid with 100-lb. rail; 414 with 90; 192 with 85 and 249 with 80. As above noted, treated ties have been used almost exclusively since 1908. A sizeable proportion of the mileage has rock or chatts ballast, this material having practically all been installed since the receivership.

As might be expected from the large proportion of coal tonnage the road has a good revenue train load. In 1922 the figure was 704, but in previous years when more normal conditions of operation were met with, the figure has risen as high as 770 as in 1920 or 796 as in 1918. The average revenue tons per loaded car in 1922 were 29. Under the more normal conditions met in 1920 they were 33, and in 1918, 34. The road received in 1922, 10 new Mikado locomotives and has on order at the present time 10 additional. At the end of 1922 it owned a total of 341 locomotives, the average tractive effort of which was 38,350 lb. Of the total 50 were of the Mikado type and 146 were Consolidations.

1922 Figures Compared

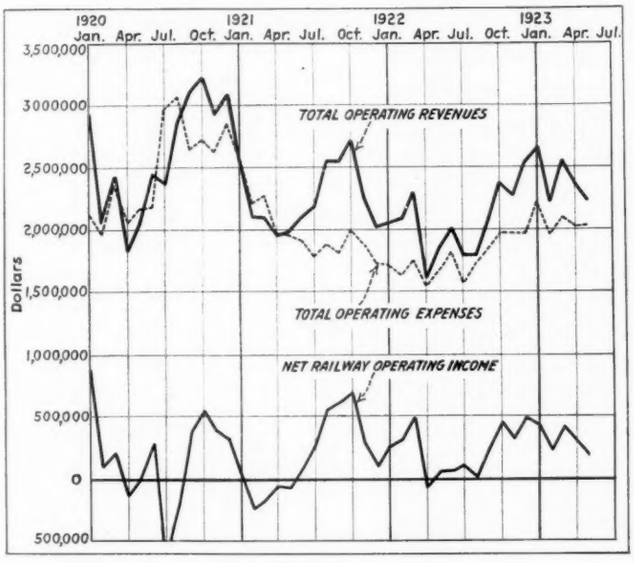
The business handled by the Chicago & Eastern Illinois in 1922 was sub-normal due to the coal strike, and the figures of revenue or of revenue tons were further reduced, as compared with previous years, by the fact that the 1922 totals do not include the traffic handled by the Chicago & Indiana Coal Railway, or if we go back to years prior to 1916, that handled by the Evansville & Indianapolis. The bituminous coal tonnage in 1922 totaled 5,969,719 tons or 50.77 per cent of the total revenue tonnage. This compares with 7,503,410 tons in 1921, which was 58.57 per cent of the total tonnage for that year.

The total revenue tons of freight in 1922 were 11,759,235, or 8.22 per cent less than the 12,812,698 tons carried in 1921. The 1922 operating revenues were $24,731,348 as compared with $27,099,146 in 1921, a reduction of $2,367,-

798 or 8.7 per cent. It happens, however, that the total operating revenues per mile in 1922, $26,167, were $2,203 greater than in 1921, the inclusion of which comparison may be of value as indicating to some extent the relative value of the Chicago & Indiana Coal Railway to the parent company. Operating expenses in 1922 totaled $21,134,733 as compared with $23,944,405 in 1921, a reduction of $2,809,671, or 11.7 per cent. There was a reduction of 7.2 per cent in transportation expenses and of 23.4 per cent in maintenance of equipment. This reduction may be ascribed to the smaller volume of traffic handled and to difficulties attendant upon the shopmen's strike which prevented work from being done while the shops were idle. The net operating income for 1922 was $2,721,469 compared with $2,153,582 for 1921, making an increase of $767,887 or 26.4 per cent.

Figures for Five Months of 1923

The conditions which the Chicago & Eastern Illinois is meeting at the present time naturally are much better than those of a year ago. The recently issued figures for the first five months of 1923 show an increase over those for the same period last year of 21.5 per cent in total revenues, and an increase of 24.4 per cent in total expenses (including, incidentally, an increase of 44.4 per cent in maintenance of equipment). The first five-month's net operating income totaled $1,574,863 which as compared with $1,058,680 in the first five months of 1922, shows an increase of $516,182 or 48.8 per cent. It is worth bearing in mind in comparing these figures with those given above for the test period and the years since the beginning of federal control, that as a general rule the Chicago & Eastern Illinois earns about two-thirds of its net income in the last half of the year.



C. & E. I. Revenues, Expenses and Net After Rents

The Chicago & Eastern Illinois issues a very complete monthly income statement, the figures being carried down to net after fixed charges. It was noted above that the net after charges in 1922, was $602,676. There was a net after charges in the first five months of 1923 of $663,719; evidence that, if business continues good throughout the rest of the present year, the Chicago & Eastern Illinois should show very favorable earnings.

Strong Cash Position

The monthly income statement, which was mentioned above, is an eight-page pamphlet and besides giving the income account down to the figure after fixed charges, it also shows the summary and classification of operating expenses by primary accounts, a condensed balance sheet as of the end of the period, traffic statistics of train, locomotive and car mileage, as well as a table showing the expenditures for the month and for the period for capital account. An especially interesting feature in the condensed balance sheet is the comparison which may be made between current assets and current liabilities. The figures as of May 31 show current liabilities of $3,523,745, whereas the current assets are set down as $9,586,508. The cash on hand is given as $853,501, but there is also an item of cash "Temporarily invested in U. S. Government securities" which amounts to no less than $4,010,407. This money is invested temporarily in government securities for the purpose of increasing the interest payable thereon, and with the idea that the securities can be sold from time to time as cash is required.

The annual report balance sheet statement as of December 31, 1922, shows current assets of $5,989,889, but investigation of the report indicates that under "Other investments" there appears the sum of $4,460,407 invested in Liberty bonds and treasury notes. There is no question that the Chicago & Eastern Illinois has the advantage of a very strong cash position, as evidenced particularly by the manner which the company has adopted, beginning with the May monthly income statement, of showing the investment in Liberty bonds and U. S. treasury certificates under the head of "cash" rather than under "other investments" where they were included in the December annual report balance sheet statement.

Present Equipment Condition

It was noted above that the Chicago & Eastern Illinois had spent 44.4 per cent more for maintenance of equipment in the first five months of 1923 than in the first five months of 1922. It is to be feared that the road still has ahead of it considerable additional maintenance of equipment work to make up besides that taken care of in the first five months. As of June 15, the road had 20.4 per cent of its cars in bad order, and of its locomotives, 20.3 per cent were held for repairs requiring over 24 hours, although there were also 18 serviceable locomotives stored. The percentages given are considerably above the average for the country as of the same date. There is a compensating factor, however, in that in the first five months of 1923, as shown by the May income statement, the credit equipment balance was $556,509, so there is apparently no danger that the Chicago & Eastern Illinois will be confronted by any shortage of equipment.

P & A Photo

Inaugural Trip of International Sleeping Car Company's Blue Train, Deauville, France

A Study of Transverse Fissures in Steel Rails*

Study of Failures Indicates Rails Are Subjected to Service Approaching Endurance Limit

By James E. Howard
Engineer Physicist, Interstate Commerce Commission

THE FIRST REPORT dealing with transverse fissures in steel rails related to a serious accident which occurred on the Lehigh Valley at Manchester, N. Y., on August 25, 1911. A transverse fissure, as a specific type of fracture, had not been recognized prior to the publication of that report. Inasmuch as this type of fracture was caused by a component not present in other engineering examples, a specific terminology was applied and the name "transverse fissure" adopted as a descriptive term

This term applies to a type of fracture which has its origin in the interior of the head of a rail and which progressively enlarges from a definite nucleus. As the term implies, the plane of rupture is crosswise the length of the rail, and substantially perpendicular to its axis.

The nucleus of the fissure, a few hundredths of an inch in diameter, presents an appearance not unlike the tensile fracture of a test piece. A silvery crescent next forms, concentric with the nucleus, which later assumes an oval shape, surrounding the nucleus, and increasing in size until the periphery of the rail is reached. The surfaces of the fissure present a silvery luster, which is maintained until air is admitted, whereupon they turn a dark color. Transverse fissures are found in different stages of development from a small silvery crescent up to a diameter of two or more inches, nearly separating the entire head of the rail. The nuclei are commonly located in the upper part of the head, not far from the middle of its depth, and predominate on the gage side. Some, however, are located centrally over the web, and a smaller number in the outer half of the head.

Cause of the Fissure

Transverse fissures have an interior origin because the metal immediately below the running surface of the head is in a state of compression due to the cold-rolling effects of the wheels. The cold rolling introduces intense strains of compression in the zone of metal along the upper part of the head. Cooling strains of fabrication cause internal strains of compression in the peripheral metal of the head. Gagging, for the purpose of straightening the rail, may introduce internal strains of compression or reverse the cooling strains to a state of tension, depending upon the direction of the gagging blows. Regardless of the cooling and gagging strains, the cold-rolling action of the wheels is the predominating influence and the heads of all rails normally acquire a state of compression in the zone of metal adjacent to the running surface.

Strains of compression at the periphery are necessarily balanced by those of tension in the interior of the head. It is in this core of tensile metal that the nuclei of transverse fissures are located. When the intensity of the strains of tension become sufficient, or the number of repetitions of loads are great enough, the rail ruptures by tension. The inside fibers rupture because they are strained in tension. The upper fibers being in compression are not the first to rupture. These remarks constitute the explanation of the formation of transverse fissures. Simply, the metal fractures where it is in tension.

At the time of publication of the report on the Manchester accident a state of general unfamiliarity prevailed upon this type of fracture. So few examples of transverse fissures had been witnessed that the failure of a rail by a fracture having an interior origin was even regarded by some as apocryphal. Three years elapsed before much activity was displayed in gathering statistical information upon their occurrence, while it is only of recent date that some roads have inaugurated such efforts.

Studied Many Failures

The number of transverse fissures included in this report exceeds 8,000, this being only a partial list of the total number of fissures which are a matter of record. These rails represent the product of each of the rail mills of the country, together with one Canadian mill, the Algoma; they represent rails from each of the great steelmaking processes, Bessemer and open-hearth; rails from all parts of the ingot; and those of different weights up to the heaviest sections which are being rolled. In numbers they predominate on trunk lines of high speed, heavy equipment, and congested traffic, where the best conditions of maintenance prevail. They represent rails which were tested and accepted under specifications promulgated by the railroads.

The number of transverse fissures is greatest on those roads where the traffic is the heaviest. It appears that transverse fissures occur in larger numbers on the gage side of the head of the rail than over the web or in the outer half of the head. Furthermore, on curves the low rails display the larger number of fissures, while on double-track road the rails carrying the heavier traffic are more affected by transverse fissures. Extreme illustrations are presented in which transverse fissures predominate in the tracks of heavier tonnage to their practical exclusion in other tracks.

The coning of the wheels concentrates the loads on the gage side of the head. The superelevation of the high rail, to compensate for maximum speeds, influences the distribution of loads at lower rates of speeds on curves. The influence of these features is displayed in the formation of transverse fissures.

On the Harrisburg division of the Philadelphia & Reading the effect of congestion of traffic on one line of rails is conspicuously shown. Heavy freight movements on this division are in an eastward direction. Transverse fissures are in great preponderance in the eastbound track. A partial enumeration shows 494 transverse fissures in rails in the eastbound track against 39 in the westbound track.

On the New York Central there were 675 transverse fissures on the gage side of the head against 125 over the web, with a lesser number located in the outer half of the head. On the division between New York and Albany there were 136 transverse fissures in low rails of curves against 15 in high rails. There was no material difference in the number of fissured rails between the right-hand and left-hand rails, the records showing 126 in the right-hand against 129 in the left-hand rails. It has been a moot point concerning the relative effect on the track of the right- and left- hand drivers of engines.

The Lehigh Valley reported 487 transverse fissures located on the gage side of the head and one fissure on the outside; high rails, 34 fissures; low rails, 132 fissures. In

*Abstracted from an extended report made to the Interstate Commerce Commission of a detailed investigation of this type of failures on many roads.

respect to serviceability, 456 fissured rails were reported as little worn, 32 as being much worn.

Influence of Season Negligible

The number of fractures is at a minimum during the summer months, with an upward trend in the fall and early winter months, a maximum being reached in the month of December. On the New York Central lines, in a group of 735 transverse fissures, 34 were reported for the month of July against 92 for the month of December. On the Delaware, Lackawanna & Western, in a group of 1,224 transverse fissures, 59 were reported in the month of July against 148 for the month of December. On the Pennsylvania Railroad, in a group of 2,316 transverse fissures, 139 were reported in the month of June against 266 for the month of December.

Transverse fissures being of progressive formation, their final stages of development may occur at any time. The length of time required for incipient fissures to make their presence known depends upon the amount and character of the traffic carried by the rails. The physical properties of steel do not undergo a material change in passing from summer to winter temperatures. If the rails are of uniform temperature throughout their cross section, it is a negligible matter to consider what the temperature is over the range covered by atmospheric conditions. If expansion in length is restricted, sun kinks may occur in the track. The relations of internal strains are not changed by mere change of temperature within atmospheric limits. The display of transverse fissures is not a matter depending upon the calendar month, nor whether the rail as a whole is exposed to ascending or descending temperatures. Track and traffic conditions are the governing factors.

There is a general feeling among engineers that uncertainties attaching to rail steel will manifest themselves most prominently in rails from the upper part of the ingot, notably in the A rails. The acceptance of a heat is generally made contingent upon the results of tests from this part of the ingot. Whatever superiority may attach to a rail from a particular part of the ingot, marked superiority is not shown in the suppression of transverse fissures, according to the experience of the several roads here referred to. According to ingot letters, the A, B, C, and D rails as entire groups on seven railroads stand to each other numerically as 100 to 100 to 78 to 66, relations which are, nevertheless, reversed on certain other roads.

A somewhat different feature is presented in the consideration of the ages of rails with respect to their ingot positions over that of their numerical relations. Rails which fractured in largest numbers during the first few years in the track came from those parts of the ingot which are generally conceded to be the best. Rails from segregated parts were fewer in numbers. These results cast a doubt upon the validity of connecting the formation of transverse fissures with the segregated parts of the ingot.

The average ages of transverse fissures on different railroads in the main reflect traffic conditions. Weights of equipment, gross tonnage, and speeds are the prominent features which characterize the conditions on those roads where maximum numbers and minimum ages of fissured rails appear.

Approximately, the average ages on seven roads were as follows:

New York Central	6 years 5 months.
Delaware, Lackawanna & Western	6 years 6 months.
Chicago & North Western	8 years 3 months.
Atchison, Topeka & Santa Fe	9 years 3 months.
Union Pacific	10 years
Southern Pacific	11 years
Central of Georgia	15 years

On the Harrisburg division of the Philadelphia & Reading the average age of 1,042 fissured rails was 3 years 2 months.

Mistrust of Particular Rollings Not Justified

The opinion seems firmly fixed in the minds of the users of rails that certain year's rollings are especially prone to display transverse fissures. This period of mistrust coincides with the average age of the rails which have fractured on individual roads or has a relation thereto. The volume of testimony is sufficient to make it clear that certain heats display greater durability than others, giving more definiteness to this phase of the case than expressed in intervals of time.

In due course of time it will be of interest to ascertain whether those years of mistrust occupy a fixed place in regard to the calendar year or whether they advance and maintain a more tangible relation to traffic conditions. In the absence of evidence touching upon this aspect of the case it hardly seems justifiable to give credence to all those surmises which would impugn so many hundreds of heats and thousands of rails.

Transverse Fissures in Bessemer Steel Rails

Rails of Bessemer steel which have displayed transverse fissures are few in numbers when compared with those which have occurred in open-hearth product. Structurally, examples of Bessemer rails have looked decidedly inferior to open-hearth rails. Preference has been given open-hearth metal by engineers; therefore, when it came to a consideration of transverse fissures, their comparative absence in Bessemer rails seemed to throw an additional cloak of mystery over their formation.

However, Bessemer rails which have displayed transverse fissures are not, taken as a group, few in number. On the New York Central a limited number have appeared in ages up to 24 years 10 months. On the Long Island they made their appearance in old rails coincident with the introduction of heavier equipment during the general European war. On the Pennsylvania they number 698. Transverse fissures have occurred in Bessemer rails of early manufacture, and also in those of recent fabrication. A rail 30 years old displayed a transverse fissure. There were 56 fissured Bessemer rails 20 years old and upward. On the other hand, a Bessemer rail of heavy weight displayed a transverse fissure when 1 year 4 months old. There is no known reason why Bessemer and open-hearth rails should not behave substantially alike in respect to the formation of this type of fracture.

The preceding remarks and diagrams have related to the formation and display of transverse fissures as they have occurred in the track. Transverse fissures have also been produced experimentally by subjecting rails to treatment analogous to the cold-rolling action of wheels. This result was accomplished by repeated, alternate, overstraining the rail longitudinally. Half-length rails were used, applying gagging blows at short intervals along the length of the head, then reversing the bend and gagging the base in the same manner. This alternation of reversed bending was continued until ultimate rupture ensued.

The position of the interior fissure was found controllable at will. Gagging the rail in upright position yielded a transverse fissure centrally over the web; inclining the rail to the right or to the left and applying the gagging blows in an oblique direction yielded transverse fissures located in the right or left side of the head, whichever way the rail was canted.

Concluding Remarks

Broadly considered, three features constitute the rail problem: (1) Girder strength. (2) Abrasive resistance to the action of wheels. (3) Cold-rolling effect of wheels on the head of the rail. If the third feature was eliminated, there would be no rail problem, since the requirements of the first and second can be met without difficulty.

The third feature is a vital one, and admits of solution in one way—by the proper regulation of wheel loads. The effects of wheel pressures, as they are received by the zone of metal at the top of the head, constitutes the essence of the rail problem. It is, per se, the rail problem.

Internal strains of magnitude are introduced by the cold-rolling action of the wheels. They remain as permanent factors in the loading of the rails, even when no rolling stock is being carried by them. These internal strains not uncommonly exceed the direct track stresses. Cold-rolling strains of compression in the top of the head reach or exceed 20,000 lb. per sq. in., the interior elements of the head acquiring a state of tension. This disposition of internal strains axiomatically explains why transverse fissures have interior origins.

Internal strains have been investigated at considerable length and the results published in the accident reports of the Bureau of Safety of the Interstate Commerce Commission. As great as these internal strains have been shown to be, it does not appear they have been given serious consideration by the users of rails. While other features have been subjects of uninterrupted discussion by railroad engineers since the introduction of steel rails, it has not come to notice that the presence and influence of internal strains has been made an issue. This universal feature, greatest of all, strangely has not been given more than passing attention.

The relation of cold-rolling strains to the formation of interior fissures not having been fully realized, confusion early arose and the discussion of transverse fissures was mingled with the subject of durability of steels. Why some rails fail and others do not under similar conditions is a question why the origins of fractures have certain definite locations. Not until Messrs. Waring and Hofammann, in 1922, announced the presence of shattered zones in the heads of rails were reasons presented which attached directly to the formation of fractures of interior origins. It has not yet been demonstrated whether shattered zones promote or delay the formation of transverse fissures.

Statistics have been presented in which variations in the behavior of rails were leading features, but without extending to the investigation of the causes. The opportunity to acquire information upon the durability of rails is in the hands of the railroad engineers. The necessary material is in their possession, and not found elsewhere.

In general summation, known examples of transverse fissures in 1911 were few. They are now numbered by tens of thousands. They are prevalent in the main trunk lines of the country and appear sparingly on roads of lesser traffic. They are found in the product of each rail mill of the country, and appear in both Bessemer and open-hearth rails. Thousands of heats of steel are represented. Transverse fissures are displayed by the heaviest rails now in use. They occur in rails which were laid on bridges as well as in those laid on ballasted track. They have been reported in rails only one month old, and also in those which were 30 years old. The average age of rails which have displayed transverse fissures on different roads shows a relation to the volume of traffic on those roads.

They occur chiefly in the tracks which carry the heaviest traffic, showing the influence of loaded freight cars, since the locomotives pass over both the heavy and the light traffic tracks. On curves, transverse fissures predominate in the low rails. In the cross section of the head, they are located chiefly on the gage side. They occur in different parts of the length of the rail. An incipient fissure has been found within 1⅛ in. of the end. Fully developed fissures have displayed themselves only 7½ in. apart. Several incipient transverse fissures are commonly present in each rail which fails from this type of fracture. In rails with shattered heads, incipient fissures have been found located in the sound metal beyond the shattered zone.

Transverse fissures have been experimentally produced, and located at will centrally over the web, in the right or in the left side of the head, according to the manner in which the rails were loaded.

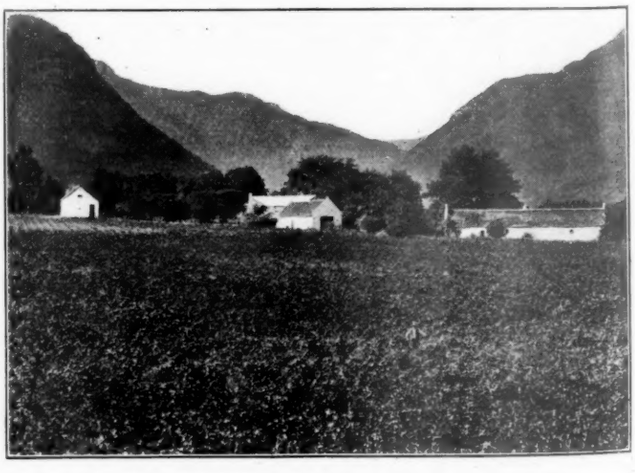
Special interest attaches to the fact that transverse fissures develop from interior origins, their presence remaining unknown until they have reached an advanced stage and become a source of danger. Since these fractures appear in large numbers, certain causes which lead to their formation must be present as common factors in each of these cases.

Internal strains which tend toward the formation of transverse fissures are acquired by all rails. Selection of the proper grade of steel and the regulation of wheel loads constitute factors for meeting their influence. Inasmuch as the adjustment of wheel loads, according to the ability of the steel to endure them, is not a flexible matter, it is left to ascertain what grades of steel possess maximum durability under current track conditions.

It is reasonable to believe that a specific and remediable cause may be found for the failures of some rails, notably those which fail prematurely, revealing whether abnormality resides in the steel, in the track, or in the wheel pressures. Investigative work should be addressed to these features. The counterpart of such an inquiry would be the investigation of the physical properties and also service conditions of rails which have shown exceptionally good endurance.

Internal strains must be reckoned with. They are just as real as those caused by the presence of external forces. There is no recourse against their introduction. The fundamental feature of land transportation, carrying loads on wheels, involves their introduction. They were present in puddled-iron rails, used under light wheel loads where, indeed, the highest internal strains yet measured have been found. It is questionable whether increased weight of rail, far beyond the heaviest now being rolled, would overcome their destructive effects.

The most obvious deduction to be made from this compilation of data on the display of transverse fissures is the apparent close approach to the limit of endurance experienced by rails under the conditions of service which now prevail on the trunk lines of the country. The prevalence of transverse fissures reached a degree of magnitude some time ago when serious and concerted action should have been taken to study the influences which affect the state of the metal of the rail in the upper part of the head, upon which rests the responsibility for the formation of transverse fissures. The ideal manner of advancing this subject would be through the co-operation of the trunk-line railroads and the steel mills.



A Scene Along the South African Railways

More Water Softeners on the Illinois Central

Installation of New Plants Marks Completion of Program to Treat All Water on 600 Miles

By C. R. Knowles
Superintendent of Water Service, Illinois Central, Chicago

THE ILLINOIS CENTRAL has recently completed nine new water treating plants and has converted three old intermittent plants into plants of the continuous type and increased their capacity about 75 per cent. In addition this road now has eight new plants under construction. When these plants are completed all water used from Clinton, Ill., through Freeport, to Omaha, Neb., a distance of 600 miles, will be treated, and a total of 40 water softening plants will be in service on the system.

The new plants are all of the continuous type and represent a departure from the usual design of water treating plant in the construction of the tanks and housing. The tanks are of the conical bottom type with riser pipe and are built in three sizes for plants having hourly capacities of 10,000, 20,000 and 30,000 gal., respectively. They are built in two heights, 35 ft. and 50 ft. the 35-ft. tanks being employed for rehandling plants and the 50 ft. tanks for gravity plants. Five hours' reaction time is provided in all cases, the capacity of the tanks being 50,000, 100,000 and 150,000 gal. Each tank is built with a standard 6-ft. riser pipe, the height of the riser pipe varying from 12 ft. on the 50,000 gal. tank to 8 ft. on the 150,000 gal. tank.

An Outstanding Feature of the New Plants Is the Conical Bottom

The treating plant houses are of a uniform design and are built in two sizes, 20 ft. by 40 ft. and 20 ft. by 60 ft., depending upon the capacity of the plant and the amount of storage space required. A space of 20 ft. by 20 ft. is reserved for the chemical equipment, filters, etc., and the remainder is used for storage of chemicals, the smaller house having storage space for two cars of chemicals and the larger house for four cars. That portion of the house reserved for the equipment has a 12-ft. ceiling to allow the necessary headroom for tanks, shafting, etc., while the storage room has a 10-ft. ceiling, as it is impractical to pile the chemicals in storage higher than 8 ft.

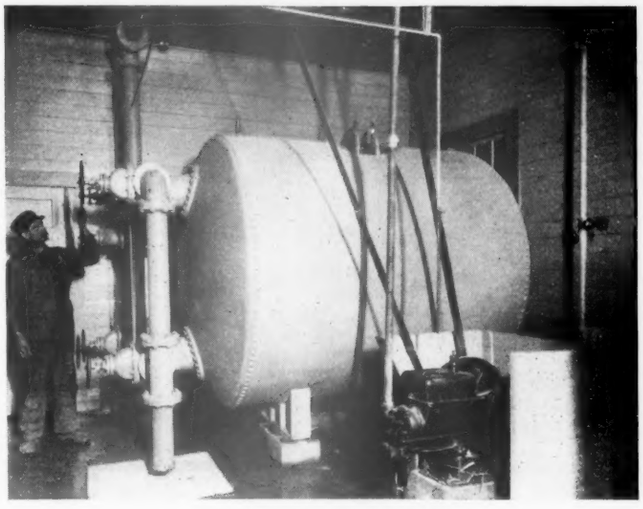
The Conical Bottoms Are Water Savers

The outstanding feature of these new plants is the conical bottom tank. The principal advantage of the conical bottom tank in water softening is found to be in the collection and removal of the sludge and the resultant saving in water used for sludging over the flat bottom tank. This feature alone will pay a good return on the cost of the tank. The sludge falls to the bottom of the conical bottom tank and accumulates in the mud drum or riser where it is easily removed through a single opening and with a minimum waste of water. Actual tests to determine the amount of water in removing sludge show that the flat bottom tank requires from four to eight times more water than a conical bottom tank, depending on the efficiency of the sludge system and the amount of sludge deposited.

The practice on the Illinois Central is to wash the sludge out twice a day and the water required for this purpose rarely exceeds 1,200 or 1,500 gal. daily, while to do the same work in a flat bottom tank would require 8,000 or 10,000 gal., a conservative estimate of the amount of water saved daily being 7,500 gal. which, at the low rate of 15 cents per thousand gallons for pumping and treating, means an annual saving of over $400 per year or six per cent on an investment of over $6,500.

Filters Are Provided

All of the new plants as well as the remodeled plants are equipped with filters to remove the suspended matter that will not settle from the water. These filters are of three types, excelsior or wood fibre filters being installed in three of the gravity plants while five are equipped with pressure sand filters and the four rehandling plants have open gravity sand filters. Sufficient head is provided above this roadside tank to overcome the resistance of the filter beds and water flows by gravity from the softener to the storage tank while the rehandling plants have clear wells or basins into which the water flows from the open sand filters and is repumped to the storage tanks.



One of the Pressure Filters

The filters have proved valuable additions to the Illinois Central plants, especially in the handling of river supplies, carrying much suspended matter as well as in preventing

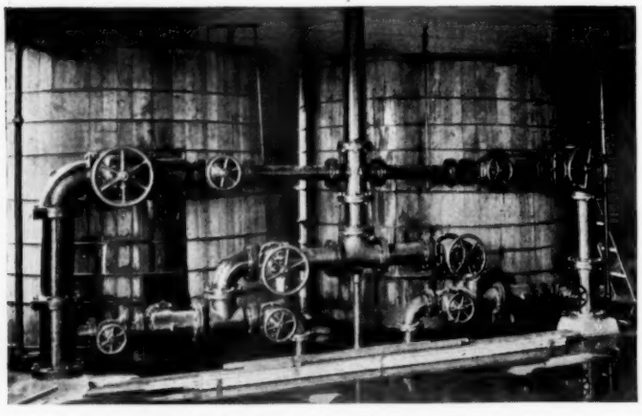
after precipitation and have been instrumental in reducing foaming of treated water. They are a decided improvement over the use of sulphate of iron which is employed only when some of the older plants have been operated in excess of their capacity. The rate of filtration is slightly over two gallons per square foot of filter area in the sand filters and about one gallon per square foot in the excelsior filters.

Most of the plants are equipped with separate batch and control or chemical feeding tanks so that a batch of chemicals of the required strength may be mixed without interruption to the operation of the softener. This feature also assists in more readily and accurately changing the strength of the solution fed when the character of the untreated water changes. Particular attention has been given to thorough mixing of the chemical solution before it is introduced into the untreated water, both batch and feeding tanks being equipped with mechanical agitation, the chemicals being thoroughly mixed first in the batch tank and kept in a uniform solution by the agitators in the feeding tank.

All of the plants are heated with either hot water or steam heat. Where the plants are located at steam pumping stations or power plants they are heated by steam. At other points hot water plants of the Arcola type are installed. Sufficient radiation is installed to maintain a temperature within the house of 70 degrees with an outside temperature of 20 degrees below zero. Radiation is also installed in the headhouse and in the valve pit beneath the tank. The heaters are designed to burn either hard or soft coal and not only furnish more efficient and uniform heat with a lower fire risk than stoves but are more economical in fuel.

The Plants Require Little Attention

All the plants are ground-operated, with all of the operating equipment requiring attention being located in the equipment room at ground level. The chemical charges of a given strength are prepared in batches and sufficient of this



Some of the Filters Are of the Gravity Type

solution is admitted to the control or feeding tank for 10 to 12 hours' treatment. Aside from the mixing of the chemical charges and the tests of the treated water, which are made daily by the plant attendant, the plants require little attention. Where a regular pumper is employed the treatment of water is made a part of his duties and at other points where no pumper is employed, an attendant is employed or the duties of operating the plant are combined with other work.

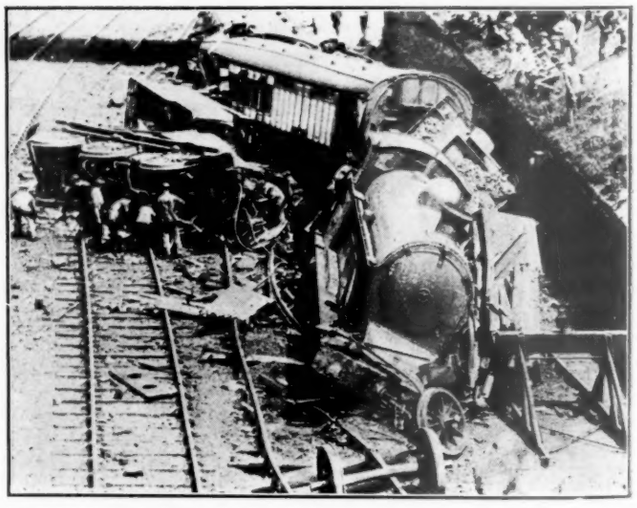
Seven of the new plants recently completed are located between Omaha and Fort Dodge, a distance of 140 miles. They cover an entire engine district and provide treated water for all locomotives operating in this territory. Three of the plants now under construction are located between Fort Dodge and Waterloo, a distance of 100 miles, comprising another engine district, and five between Freeport and Clinton, two complete engine districts. This is in line with the general policy of the Illinois Central of equipping engine districts complete, thus assuring a uniform quality of water to all locomotives. It results in much better operation through the prevention of excessive foaming and other troubles due to the mixed use of treated and untreated water in the same boilers.

Economy in Standardization

A feature worthy of special note in the construction of these plants is the standardization of tanks and housing. All tanks are of the same design and of the same size for a given capacity and type of plant. The height of tanks is also uniform, a height of 50 ft. being maintained for gravity plants and 35 ft. for rehandling plants. This avoids different diameters for tanks of the same capacity. By this adaptation of heights and sizes it is possible to construct treating plants of any capacity or type with tanks of only three diameters and two heights and conforming to manufacturer's standards. This is an important feature in keeping the cost of the tanks down and also insures more prompt deliveries. The design of the housing is uniform and is confined to two sizes. No attempt has been made to standardize on the type of treating equipment, the design of plant being such that any water softening equipment on the market can be adapted to use in the plant at no additional expense.

While the new plants have not been in service long enough to enable any definite figures or saving to be compiled, there has been a material improvement in boiler operation and the plants will show a good return on the investment in fuel saved, boiler repairs, improved train operation, etc., as the waters treated are among the worst on the system, ranging from 30 to 60 grains hard.

SHOPCRAFTS EMPLOYEES on the Great Northern who went out on strike on July 1 of last year, and who have since been unsuccessful in their attempts to return to work, have applied to the federal court at St. Paul, Minn., for an order to restrain the "company" association of employees "from interfering with their return to work." The hearing on the petition will be held on August 6.



"P. & A. Photo"

Collision on the London, Midland & Scottish, Near Diggle, England, on July 5

Good-Will and How It May Be Cultivated

Intelligent Co-operation of Every Employee Required—Little Things Count

By Franklin Snow

A FAIR MAJORITY of the people in this country don't care a rap whether the railroads are under private or government control. They merely are waiting to be shown which form of operation will furnish the best service at the cheapest rates. Some labor union leaders, together with certain senators and congressmen who can make political capital out of pleas for a return to federal operation, together with their camp-followers, are ardent in their "economic" discourses on the "dangers" of private management, but their viewpoint is discounted by thoughtful persons, who readily can discern that such arguments are based purely on selfishness—or, more plainly, on the hope of pecuniary reward. The best thought in the country—the leading economists, bankers, editors, statesmen and business men generally agree whole-heartedly with President Harding's pronouncement, "Less government in business."

Pullman Car Gossip

Assuming that a majority of the people are passively favorable to a continuation of railroad affairs "as is," what is to be done to counteract the loose talking of various public men, labor chieftains, and the smaller fry who make themselves heard in every Pullman smoking compartment, "exposing" the reasons for the "awful rates which are crippling business," etc? It is the last group whose influence is the most pernicious, for their arguments must sound logical to the uninformed, and the Pullman audience is usually at leisure and in a mood to listen to these self-appointed orators.

The story goes that the president of a railroad, finding it tedious to ride in solitary grandeur in his business car, went forward to one of the sleepers. Entering the smoker, he was greeted by a friend, who exclaimed, "Why, Jim, what are you doing here when you have your own car to ride in?"

"Well," responded the executive, "I got tired of sitting out there alone, so thought I'd come forward and listen to you fellows lie to each other for a while."

Unfortunately, there is not always a president, nor even a subordinate officer or employee present to refute the lies, or *if* present, *able* to combat effectively the arguments of the commercial travelers—equipped as they are with false imputations gleaned from such publications as "The Sample Case," which have been particularly bitter toward the railroads as a result of the mileage rates and Pullman surcharge.

In the case of the employees, the question well may be asked, "Is it their fault that they are unable to uphold the railroads' side?" Few employees are men of higher education. Few understand the economics of railroad operation. How many have such matters presented to them in such a manner that they can defend the railroads' position, not only as a *duty*, but because they have been *sold* on the theory that private operation of the railroads is for the best good of all concerned, and primarily themselves? It may be contended that the railroad employee will not defend his company from attack—that his attitude is one of indifference or even open hostility. One hears frequent complaints and criticisms regarding the attitude of the railroad man, and doubtless many of them are justified, but taking the railroad man by and large, he is a pretty courteous, well-informed, energetic individual, desirous of giving his best in his appointed tasks, whether or not he agrees with the policies of a company, which, unfortunately, he reasons, pays him little enough attention excepting when he errs in the performance of his duties.

Carriers of Good-Will

But there are so many encouraging instances where railroad men have shown their worth that it seems a pity that this potential loyalty cannot be cemented into something tangible. Take for example, the Reading conductor who says, "Yes, sir; we're carrying a right good crowd every day, because we try hard to please 'em and bring 'em in on time;" or the B. & O. dining-car waiter, who observes, "I've worked on a lot of roads, boss, but the B. & O. sure is the road that knows how to put out a good feed for a moderate price;" consider the Grand Central Terminal guard who patiently straightens out the difficulties of a foreigner and helps him with his baggage across the concourse to a gate which is being held open solely for this passenger.

Here, indeed, are plenty of carriers of "Good-will." And it would seem that *all* railroad employees are potential friends of the railroads; most of them love the railroad game; many of them are ambitious; a vast majority are good, solid American citizens, in name, faith, and characteristics; *but*, 99 per cent of them never are praised, never are encouraged, and seldom are treated in the cordial, co-operative manner which distinguishes the relations of many business houses with their employees. Here is the nucleus of an organization of "Railroad Boosters" (and be it said that there is no employee so disgusting to the customer of a company as the one who is a constant "knocker"). True, any conductor or a ticket agent may have an occasional grouch, and thereby create a harmful impression, but it is the one who *constantly* carries a grouch, and who gives a gruff, curt reply to a traveler's queries, that must be told the error of his ways; must be shown how "good-will" helps. Among the "passively favorable to private operation," are thousands who will change over-night if the treatment accorded them is not to their liking.

It is easy to theorize about getting greater interest and loyalty from employees. It certainly can not be effected—assuming, for the sake of argument, that the bulk of the railroad employees *are* disinterested—unless men are properly stimulated, encouraged and rewarded. A word of praise will go a long way. A former superior of mine once said, "So long as you do good work in a railroad office, it's no more than what you should do. But as soon as anything goes wrong, you're a son-of-a-gun." Which soliloquy is worthy of much thought!

Cultivating Boosters

Consider the value of the annual pass, or an extension of the trip pass privilege as a reward for good work, meritorious suggestions and the like. Here is one inexpensive, yet positive method of holding out a reward for industry and efficiency.

Few railroad men are possessed of a higher education, and one can hardly censure them for failing to grasp the true situation of the railroads, or, conversely, for "falling" for the rot which various employee-union periodicals, and

the Hearst newspapers publish. Yet at the same time, college men are not welcomed—or, at any rate, solicited, by a railroad. It is not to be asserted that every college graduate is the superior of every non-college man, for such is far from the case. But the writer, as a non-college man, has learned to respect the graduate of a higher institution of learning for certain obvious traits, notably, the power of analysis, or reasoning. He has gained something in rubbing shoulders with men from other sections of the country which the clerk who has lived and worked in one town all his life never can get. Again, the college man has been imbued with the spirit of loyalty. The spirit which has driven a man through a gruelling game, or race, with nothing at stake save victory for sport's sake, and the spirit which has been taught to those who do their part in a cheering section is the kind of stuff that is needed on every railroad. The will to drive ahead and the loyalty to boost and to boast about "our road," which well might be expected from a college man, is of value to the company so fortunate as to have a few such men in service. Compare this with the "I'm only railroading until I can get a decent job" attitude which, while unusual, is nevertheless existent in many organizations, and which is harmful even to the best disciplined unit.

But college men are not solicited, and it is doubtful if they would enter railroad service (aside from the engineering department) even if they were urged to, for they know the American railroads are wedded to the policy of seniority, and that meritorious work may go for naught. Consequently, they turn, either to the commercial fields, or to the progressive, appreciative industrial companies where promotion is assured when and if ability is demonstrated. E. K. Hall, vice-president of the American Telephone & Telegraph Company, commenting on railroad practices, says that railroad men either are marked for dismissal for "butting in" by attempting to criticize their superiors, or their idea is taken up by the section chief, who is more than apt to take all the credit therefor unto himself. The policy of this company does not include attention to seniority. "We have no seniority rules in effect in any companies of the Bell System," he states.

Employees as Stockholders

Can this be the reason for the "good-will" felt by employees, who, to the number of 43,000, have purchased A. T. & T. stock? And is it this stock-ownership by employees which has caused the telephone industry with low charges to earn such huge returns that dividends must frequently be increased and surplus distributed in stock dividends? It is true that some railroads have made desultory attempts to interest their employees in the purchase of stock, although the efforts have not been as successful as might be wished. The advantages of such joint partnership in an industrial enterprise are witnessed in the case of the Philadelphia Rapid Transit Company, where Mr. Mitten has enabled his men to obtain control of the company. Nowhere may a more loyal and enthusiastic body of workers be found. A man whose own money is invested in his company, unavoidably is a carrier of "good-will" and is bound to be a "booster."

It may seem that we have digressed from the topic of "good-will" in thus commenting on personnel matters, yet it is through the railroad workers that a favorable sentiment toward the carriers must be formulated, and any suggestion tending toward making a more contented and enthusiastic force are means to the end in view. The question of employee-ownership of stock would seem to be one of the most helpful steps in this direction.

Yet even more important in this connection would be a wider distribution of stock among members of the general public. It is not reasonable to assert that railroad stocks are a poor buy, when several stocks such as Union Pacific, Atchison, Southern Pacific, Pennsylvania, etc., are selling to yield well over 6 per cent. The American Telephone Company, afore-mentioned, has seen the need of a favorable attitude on the part of its customers, and with 240,000 stockholders already constantly is striving to increase this army, realizing that every security-owner is a carrier of good-will for the telephone industry. In order to get its stock into the hands of the many, rather than the few, it is purchasing stock in the open market and offering this to any subscriber, on an exceedingly liberal partial-payment plan. Not only that, but its subordinate officers and branch managers are devoting their own time, evenings, to personal calls on telephone subscribers in an effort to push this undertaking. The surprising part of it is that they receive no commissions for their labors—they are doing it entirely out of loyalty to their company. It is not to be denied that this particular stock is a better buy than are railroad securities in these uncertain times, yet the theory of having a large number of small-stockholders, and particularly among users of the company's facilities, is one which the railroads might well consider seriously.

Little Things Count

There are many ways of inculcating a feeling of "good-will." Methods such as interesting customers financially in the company which they patronize are, of course, secondary to that of pleasing patrons through actual service rendered. The railroads can not cater to the idiosyncrasies of their patrons to the same extent as does the hotel which maintains that "the guest is always right," for the railroad industry is too vast and complex to permit of its humoring the casual whim of every traveler; nor can the railroads' representatives play nurse-maid to every grouch. On the other hand, there are many things that the "public relations departments" can attend to which would alleviate much hard feeling toward the lines which they represent. The incident of the dining-car steward comes to mind; the one who grumbled because a passenger declined to pay an overcharge of 15 cents on his check. The matter was finally adjusted by the steward's request that the passenger sign his name and address on the back of the check. "Otherwise," he explained, "the company might think I was trying to knock down some money." What respect can a business man have for a company which evidently is so distrustful of one of its most important carriers of good-will? And by-the-way, why does the price of morning papers on trains entering a large city vary from two cents to a nickel? It is the custom of many hotels to give each guest a morning paper. Such a practice might be beneficial to the railroads. At any rate, it would eliminate some sarcastic comments regarding the variance in price, which travelers indulge in in this instance—not necessarily because any one cares about the money, but because it offers an opportunity to criticize a railroad, an opportunity which is "meat" to many of the Pullman-smoker orators.

Unfortunately, little practices such as these go undetected by railroad officers, for the moment one boards a train he is spotted. A brass band could give him no greater publicity. Word passes through the train that "Old man so-and-so is with us today," and every one from train-conductor to dining-car waiter is on his toes to give a good impression, and the official presumably sees little to correct. A traffic inspector would be a mighty useful adjunct to every railroad, provided he paid cash fare, and in every respect gave the appearance of being a commercial traveler. Through this medium, many trivial matters which travelers might magnify could be detected and the proper corrective measures applied. Any expense which may result in increasing good-will is in reality an economy, for good-will is the strongest asset a railroad can have. "A satisfied customer is our best

advertisement" is an old bromide, but its effectiveness as a railroad motto cannot be disputed.

Everyone who uses the railroads bases his opinion on the railroads in general directly on the service which he, individually, receives. With this in mind, it would seem that many extravagances would be justifiable under the caption of "advertising." The dining-car again may be mentioned. Despite the articles in the *Railway Age* referring to the loss already sustained on dining-car operations, the fact remains that the public considers the charges high. The fact that there is such a wide variance in charges at present, is cause for comment among travelers. People reason, "If the A. & B. can put out a fine dinner for 75 cents, why does the X. & Y. charge $1.25?" Why are there such differences in price? The railroads are standing shoulder-to-shoulder in an effort to avert anything savoring of government control. Such being the case, it is by no means a disgrace for one road to pattern after another's features, and in this statement I refer to matters other than dining-car charges.

There are so many minor matters which unconsciously please patrons that it is difficult to outline them in a short article. For instance, the stereopticon device in use in the Washington Union Station is a valuable adjunct; yet where is there any other station so equipped? Cleanliness has its effect on the ladies, too. The Baltimore & Ohio and the Reading come in for their share of praise because of the cleanliness of their Philadelphia terminals. Then again, the simple innovation of Mr. McAdoo's—that of announcing the cause of train delays to passengers—merits consideration, or rather, adoption.

The Newspapers

These plans to foster good-will are aimed, of course, at passengers. That of furnishing the press with authentic material is ably handled by the publicity staffs of the individual lines and by the several associations in existence for this purpose. There are plenty of papers which are willing to give the railroads a square deal, and naturally, the papers so inclined are among the leading ones of the country, and are read by intelligent, thoughtful persons. It is papers such as the Hearst papers with their enormous circulations among ignorant readers which do the damage, and it is to offest their propaganda that the railroads must furnish such service, and give such attention to their patrons that the readers of these sheets unconsciously will discount the editorial criticisms which they read, as they recall the dealings which they have enjoyed with the railroads they patronize.

The assistance of the press can not be disregarded in endeavoring to create a universal sentiment of good-will. And this assistance is more likely to be forthcoming if a more liberal advertising policy is pursued. No business concern today asks the question, "Shall we advertise?" The question is, "How much can we spend and what papers shall we use?" Yet every real railroad man will deplore the thought that "good-will" must be *bought*. Rather would every one connected with the railroads prove that "good-will" can be *created*, and created on the soundest of all foundations, namely, "good-service."

In a Collision on the National Transcontinental (C. N. R.) at Picard, 75 miles west of Edmundston, N. B., on July 28, between a westbound passenger train and an eastbound freight, three trainmen and a news agent were killed and the fireman and several passengers were injured.

In the Federal Court at Chicago on July 27 five men were indicted by the grand jury on charges of being ringleaders in an organization of Pullman car conductors and porters who have been carrying traveling men at half fare. Some or all of these men were on runs to and from Atlanta, Ga.

Headlight for Track Inspection

An inspection car type of headlight in which is used the patented Golden Glow reflector has been placed on the market by the Electric Service Supplies Company, Philadelphia. These headlights, as illustrated, are designed to be suspended from the platform of inspection or

Type LFL-128 Inspector Headlight

private cars over the center of each rail as shown by diagram. By training each beam along its rail a very complete illumination is secured of the entire road bed. The light is fitted with an extra front door ring having a heavy wire screen to protect the front glass and reflector from breakage. This

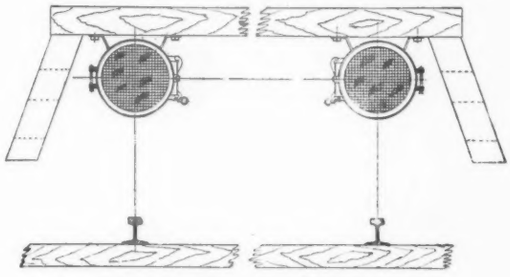


Diagram Showing Installation

outer screen door can be opened independently of the inner door, thus permitting cleaning the front glass.

The method of suspending headlights from the platform has been found more desirable because the eyes of the observer do not need to penetrate the beam to such an extent as when installed on the roof or railing of the car.

A Group of Polish Railway Officers

General News Department

The dates of the meeting of the Old Time Telegraphers' and Historical Association, which is to be held at Denver, Colo., the first week in September, are Thursday, Friday and Saturday, the 6th, 7th and 8th.

Examiners, at salaries ranging from $2,640 to $5,000 a year, are wanted by the Interstate Commerce Commission, and the United States Civil Service Commission will hold examinations throughout the country on September 19 and 20. Examiners are required to hold hearings and to make reports on freight rate controversies and other legal questions which come before the commission under the Interstate Commerce Law.

Railway Treasury Officers' Association

The executive committee of this association announces that the annual meeting of the association will be held at Pittsburgh, Pa., on Thursday and Friday, October 18 and 19. R. W. Morrison has been appointed chairman of the committee on arrangements and entertainment; T. H. B. McKnight, chairman of the program committee; R. P. Ahrens, attendance committee, and A. F. Bayfield, audit committee.

Government Appeals Mileage Book Decision to Supreme Court

The government's appeal from the decision of the federal district court of Massachusetts in the interchangeable mileage book case was filed in the United States Supreme Court on July 31. The court was asked to set aside the temporary injunction granted by the district court and to enforce the Commission's order of March 6 requiring the railroads to issue interchangeable coupon tickets at 20 per cent under the regular ticket fare.

Railway General Foremen's Association

The following tentative program has been announced for the 1923 convention at Chicago: September 4—Convention called to order by J. B. Wright, president; invocation, Rev. Robert O. Cooper; address of welcome, Mayor Dever, Chicago; response, J. B. Wright, Hocking Valley; address, Ben W. Hooper, chairman, U. S. Labor Board; response, L. A. North, Illinois Central; president, address, J. B. Wright. September 5—Report of secretary-treasurer, William Hall; appointment of committees; address, James C. Davis, director general of railroads; response, H. T. Cromwell, Baltimore & Ohio; topic No. 1, Shop Efficiency in Locomotive and Car Departments, A. F. A'Hearn and Charles F. Baumann, chairmen; election of officers. September 6—Address, a prominent railroad official; response; topic No. 2, General Repair Methods and Maintenance of Valves, Valve Gears and Power Reverse Gears, F. J. Spanganberger, chairman; topic No. 3, General Repair Methods and Maintenance of Stokers, Coal Pushers and Air Fire Doors, W. S. Buntain, chairman. September 7—Topic No. 4, Shop Kinks, Locomotive and Car Departments, G. H. Logan, chairman; topic No. 5, Welding of Tires, Flanges, etc., H. T. Cromwell, chairman; reports of committees and miscellaneous business, adjournment.

Western Maryland's Pension System

Since publishing the article on old-age pensions in the *Railway Age* of July 14, page 65, information has been received from the Western Maryland concerning its pension system. This was inaugurated on January 1, 1916. Originally employees who had reached the age of 70 years and had been in the service of the company for at least 20 years, were, upon application, retired with a pension allowance. On January 1, 1917, the age limit was reduced to 68 years, and on July 15, 1918, to 65. The method of computing the pension payments follows closely that in use on most railroads; namely, one per cent for each year of continuous service, using the average monthly pay for the 10 years preceding retirement as a basis. The minimum pension allowance is $15 a month and the maximum $100, which are charged to operating expenses. Employees of the company who are members of the Voluntary Relief Department also receive a superannuation allowance in addition to the pension allowance of the company. This Voluntary Relief Department was organized in August, 1885, the members being grouped into six classes according to their earnings. It is divided into three sections, relief, savings and superannuation. The last makes provisions for members who by reason of age or infirmity are relieved or retired from the service of the company, the allowance being based upon the class to which the member belongs.

A New Department on the Rock Island

A department of personnel and public relations, headed by H. S. Ray, assistant to the president, who now has the title of director of personnel and public relations, has been established on the Chicago, Rock Island & Pacific. The department will function under two divisions. A. B. Ramsdell, assistant vice-president in charge of labor, will be assistant director of personnel and W. E. Babb, editor of the Rock Island Magazine, will be assistant director of public relations. The new department will attend to: Supervision of wages and working conditions; supervision of recreational activities among employees, including social clubs, outings, musical organizations and athletic teams; development of educational activities to help employees prepare for promotion and to assist them in developing their capacity; development of housing facilities for employees, together with the supervision of Y. M. C. A. and other rest houses at terminal points; plans for the improvement of the health of employees and conditions surrounding their work; supervision of the Rock Island Monthly Magazine and other employee publications; supervision of advertising literature of an institutional character; contact with civic and community organizations and with the public, to the end that a better mutual understanding may be developed and maintained.

Automatic Train Control in Service on P. R. R.

The Pennsylvania Railroad announces that the automatic train-control system which has been installed on the Lewistown branch, Lewistown, Pa., northeast, 50 miles, to Sunbury, has been completed and has been in use since July 11; and that "the results thus far obtained have been extremely encouraging and justify hopes that the system may provide a successful solution of the problem of preventing collisions automatically, regardless of human failures." The movements of all trains, both freight and passenger, are subject to its control. The automatic equipment covers the branch, 45 miles, single track and five miles, double track, of the Sunbury division; and 12 locomotives, all that are used regularly on the branch. This branch is single track, with three regular passenger trains each way, daily. The block sections are about one mile in length. The train control system operates without wayside signals, but there are visual signals at the meeting points, about every five miles. The light signals in the locomotive cab are lettered "A," "R," and "S"; *A* for clear (two blocks clear), *R* for medium speed (one block clear) and *S* for slow speed. At some of the meeting places the visual wayside signals are arranged to be operated by the train dispatcher; at others, or where a train needs to be stopped the conductor of a train which is held goes to the telephone, with which each signal is equipped, and receives the order.

The train control system here used is that of the Union Switch & Signal Company, Swissvale, Pa., and this is the first installation of the system. It is of the inductive type, giving continuous control with continuous indications in the cab, so that the engine-

man receives immediate notice of any change in conditions either in the block that he is in, or in the block in advance.

The electric current is supplied by a 60-cycle transmission line 4,400 volts, single phase. No apparatus is required on the roadway beyond that which is used with automatic visual block signals.

"The Cost of Safety Is Only a Thought"

At the shops of the Louisville & Nashville, at Albany, Ala., the second largest repair-plant on that road, the Safety Committee sees that a "safety slogan" gets into the hands of each employee every week; this by means of a large-type legend printed on the back of the individual employee's daily service card, usually on a Monday. Two of these cards, reduced about one-half in width and height, are reproduced in the illustration. The heading on the card "This Side Front" is intended evidently as a temporary title; after the employee has committed the safety injunction to memory, the other side—the service card—becomes the front. Another one of the slogans is given at the head of this paragraph. Following are others:

"Don't charge anything to the personal injury account today."
"Safety saves suffering, sadness and sorrow."
"The chance taker is the accident maker."
"The road to the hospital is paved with carelessness."
"Insure yourself with a safety policy."

Another regular practice of the committee is to post new bulletins very frequently. These warnings are lettered in white on a bright red background, and are posted throughout the shops, especially in locations where persons walking about need to be particularly careful. Many of these posters are furnished by the National Safety Council. These shops claim to have made the best record on the Louisville & Nashville system. In the five months ending with May, the average number of personal injuries per month was 3.6, the average total number of persons employed being 1,800. The personal injury record is made up on the basis prescribed by the Interstate Commerce Commission, which includes every injury of an employee who loses over three days' time.

C. N. R. Neebing Terminal in Operation

The Canadian National has completed and put into service its Neebing Terminal at West Fort William, Ont. The terminal, connected with the Canadian Northern and the Grand Trunk Pacific, combines the grain handling facilities of these two C. N. R. lines at the head of the Great Lakes.

The new terminal comprises an area about three miles long by one-quarter of a mile wide. In the new terminals there is provided an eastbound receiving yard with eight tracks, each track having a capacity for 80 cars, making a total capacity of 640 cars; an eastbound classification yard with 20 tracks, 50 to 75 cars capacity each, making the total eastbound capacity of 1,250 cars, and a westbound departure yard of 13 tracks, each having a capacity for 80 cars, making a total westbound capacity of 1,040 cars. There is also a car repair yard with six tracks, and a total capacity for 108 cars, so that the total capacity of the yardage now constructed will be a little over 3,000 cars. Provision has been made for future extension of the facilities as traffic warrants this. The yard track together with the locomotive, house and other tracks required the building of 43.8 miles of track. The problem of co-ordinating the terminal facilities of the two routes operating from Winnipeg to the head of the lakes has been a most difficult one for the Canadian National to solve. It is felt that the completion of the Neebing Terminal will almost completely obviate the difficulties and will prove of immense benefit to both the railway company and the shipper.

Malaria in the Southwest

The United States Public Health Service, Washington, in a bulletin just issued reports the results of a malaria survey of the Missouri Pacific Railroad lines south of St. Louis, conducted in 1922 in co-operation with the railroad company and the State health officers of Arkansas and Louisiana. It was found that during the last 23 years the number of employees given hospital treatment for malaria in the hospitals of the Employees' Hospital Association averaged over 1,000 annually, or 45 per cent of all sick cases. For the same period injuries and surgical cases combined totaled only 75 per cent of the malaria admissions. In addition over 4,000 employees received out-patient treatment for malaria each year. The hospital malaria rate is eight times higher among employees working south of St. Louis than among those west of that point. The highest hospital malaria rate among the groups on the Southern Division was 79.7, found among the bridge and building crews and the extra gangs. Statements from railroad foremen indicate that malaria constitutes enormous charges against the cost of operation by reducing the efficiency of labor, by producing a shortage of labor and by creating a high labor turnover. A similar condition exists among the agricultural and industrial enterprises of the territory. Recommendations for a railroad malaria control program made by the Public Health Service embraces the protection of employees by effective screening of bunk cars and section houses, prophylactic quinine for floating gangs and section men and anti-mosquito campaigns in shop towns and division points, and educational measures. This report, Public Health Bulletin No. 135, can be obtained free of charge from the Bureau of the United States Public Health Service, Washington, D. C., as long as the limited supply lasts.

Sunday Crossing Accidents in Nine States

The newspapers of Monday morning last (July 30) reported 35 persons killed in automobiles struck by railroad trains during the preceding day, together with a considerable number of injured. An eastbound express train of the Pennsylvania killed four persons in this way at Highland, Ill., and, a few hours later, struck another automobile on a crossing at Liggett, Ind., 130 miles east of Highland and killed nine more. Five were killed at Rockville Center, N. Y. on the Long Island railroad about two o'clock in the morning. In this case the automobile was running at high speed and the accounts say that the roadway was closed properly by a gate. The other cases were in New Jersey, Missouri, California, North Carolina, Vermont, Kansas and Illinois; and the railroads on which they occurred were the Philadelphia & Reading, the Missouri Pacific, the Southern Pacific, the Seaboard Air Line, the Atchison, Topeka & Santa Fe and the Pennsylvania (in the Vermont accident, the name of the road is not given).

In connection with the question of safety at crossings, it is of interest to know that the Standard Oil Company, of Indiana, which has in use over 8,000 auto-vehicles in the middle western states, requires each of its drivers to sign a pledge always to bring his car or truck to a full stop before crossing railroad tracks. The company keeps up a careful crossing campaign among its men, and every vehicle bears a sign reading in bold letters "This vehicle makes full stop at all railroad crossings."

Observations made in Virginia since the advent of the law of that state requiring stops, are said to have shown that a large proportion of automobile drivers now approach crossings cautious-

ly; and that 42 per cent, out of about 500 observed, actually stopped. Observers of the same railroad company found in West Virginia and Kentucky a much smaller proportion of careful drivers.

An automobile "accident" unlike those reported last Sunday was that which occurred near Suffolk, Va., on July 5, when a farmer, named Johnson, about 65 years old, driving with his wife, brought his car to a stop—for some reason not explained—on a crossing of the Atlantic Coast Line. A passenger train, moving at about 40 miles an hour, was at that moment approaching the crossing, and not far away; and it struck the automobile and wrecked it completely; but Mr. Johnson was landed on the running board of the locomotive and his wife on the pilot beam; and in the case of both of them, their injuries were reported as "slight." The conductor and brakemen, after the train was brought to a stop, ran back to pick up the wreck; and for some little time were nonplused by finding no trace of the victims.

The M. D. & V. and the B., C. & A

The Pennsylvania Railroad, controlling the two railways which furnish the principal means of transportation from Baltimore, Md., to the eastern shore of Maryland and the territory beyond, has issued a circular to the communities which are served by these roads, explaining its plans for meeting the crisis brought about by the inability of both roads to meet expenses under the present light volume of business. This manifesto has been laid before the Public Service Commission of Maryland and the governor of the state; and an appeal is made for the public to decide what it will do. The governor has appointed a large committee to consider the question.

Both roads have steamboat connection between Baltimore and their western termini on Chesapeake Bay. The Maryland, Delaware & Virginia starts from Love Point, which is 27 miles across the bay from Baltimore, and extends eastward 72 miles to Lewes, Del., on Delaware Bay, with a branch 6 miles long to Centreville. The Baltimore, Chesapeake & Atlantic starts from Claiborne, 44 miles from Baltimore, and extends southeastward 88 miles to Ocean City.

The plan now proposed is to use parts of the two roads, creating virtually a new route into and through the Eastern Shore counties. This route would be from Love Point to Queen Anne, 23 miles, then southward on the Oxford branch of the Pennsylvania Railroad to Easton, and thence by the B. C. & A. to Ocean City. In addition, the Pennsylvania proposes that an attempt be made to run self-supporting trains until December 31 on the Centreville branch and also between Queen Anne and West Denton. Also an attempt will be made to continue traffic between Claiborne and Easton.

The success of the plans will depend also on the maintenance of suitable subsidies for some of the steamboat lines. The towns on the sections to be abolished now have access to stations on other railroads by good motor highways. The circular concludes:

"Under former conditions there were two rail lines that crossed the peninsula. Neither was prosperous, and very large sums of money have been lost in their operation. These losses from operation have fallen entirely upon the Pennsylvania Railroad. The new plan for connecting up the stronger portions of both lines into one new route, affords hope of substituting a single self-sustaining line for two which cannot pay their way. This hope, the Pennsylvania management believes, has the best of opportunity for realization, provided the people in the territory served will co-operate in the effort to make the plan a success."

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Joseph Sinkler, Pilot Packing Company, 122 South Michigan Ave., Chicago. Meeting with Air Brake Association.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—L. A. Stone, C. & E. I. Ry., Chicago.

AMERICAN ASSOCIATION OF ENGINEERS.—C. E. Drayer, 63 E. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 So. Michigan Ave., Chicago. Next meeting, June 3, 1924, Montreal, Canada.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Annual meeting September 17, 1923, Montreal, Que., Canada.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothchild, Room 400, Union Station, St. Louis, Mo. Next meeting, June 18-20, 1924, Buffalo, N. Y.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 8 W. 40th St., New York. Next convention, October 8-12, Atlantic City, N. J.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamlin Ave., Chicago, Ill.

AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, General Secretary, 30 Vesey St., New York, N. Y.

Division I.—Operating, J. C. Caviston, 30 Vesey St., New York, N. Y.

Freight Station Section (including former activities of American Association of Freight Agents).—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association).—J. C. Caviston, 30 Vesey St., New York, N. Y.

Safety Section.—J. C. Caviston, 30 Vesey St., New York.

Telegraph and Telephone Section (including former activities of the Association of Railway Telegraph Superintendents).—W. A. Fairbanks, 30 Vesey St., New York, N. Y.

Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting Officers).—G. W. Covert, 431 South Dearborn St., Chicago, Ill.

Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Next annual meeting, March 11-13, 1924, Chicago. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section.—E. H. Fritch.

Electric Section.—E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association).—H. S. Balliet, 30 Vesey St., New York, N. Y. Next meeting November 14, Hotel Pennsylvania, New York. Annual meeting, March 13 and 14, 1924, Chicago.

Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.

Division VI.—Purchases and Stores (including former activities of the Railway Storekeepers' Association).—W. J. Farrell, 30 Vesey St., New York, N. Y.

Division VII.—Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill. Next convention, April, 1924, New Orleans, La.

Car Service Division.—C. A. Buch, 718 18th St., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Next convention, October 16-18, 1928, Seattle, Wash. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—W. H. Hill, Agricultural Agent, New York Central, Chicago. Semi-annual meeting, December 6 and 7, Chicago; annual meeting, May 14-16, 1924, Savannah, Ga.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Next annual meeting, March 11-13, 1924, Chicago. Exhibit by National Railway Appliance Association.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division V.)

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eisenman, 4600 Prospect Ave., Cleveland, Ohio.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Prof. J. H. Dunlap, 33 W. 39th St., New York. Annual meeting, July 11-13, Hotel Drake, Chicago. Regular meeting 1st and 3d Wednesdays in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

Railroad Division.—A. F. Stuebing, Bradford Draft Gear Co., 23 W. 43rd St., New York.

AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, 1310-1311 Mallers Bldg., Chicago, Ill.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—P. R. Hicks, Room 1146 Otis Bldg., Chicago. Next convention January 15-17, 1924, Muehlebach Hotel, Kansas City, Mo.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, Northern Pacific Ry., St. Paul, Minn. Next annual meeting, May, 1924, West Baden, Ind.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Annual convention, November 6-9, Hotel La Salle, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 320 Munsey Bldg., Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—A. W. Clokey, 1658 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division I.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division II.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—John Nelson, Joseph E. Nelson & Sons, 3240 South Michigan Ave., Chicago. Meeting with convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—W. A. Booth, 53 Rushbrook St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—Thomas B. Koeneke, 604 Federal Reserve Bank Bldg., St. Louis, Mo. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Meetings, 2d Thursday, January to November, Hotel Iroquois, Buffalo, N. Y. Interim meetings, 2d Thursday, February, April, June, Hotel Statler, Buffalo, N. Y. Ladies night, September meeting. Jubilee dinner, January 9, Hotel Statler.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. P. Elliott, Terminal Railroad Association of St. Louis, East St. Louis, Ill., annual meeting, October 3, 4and 5, Hotel Sherman, Chicago, Ill.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, 34th St. and Artesian Ave., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.

CINCINNATI RAILROAD CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio. Meetings, 2d Tuesday in February, May, September and November.

EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N. W., Washington, D. C.

FREIGHT CLAIM ASSOCIATION.—(See American Railway Association Division VII.)

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—C. H. Treichel, Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3rd Friday in month, Room 1414 Manhattan Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—George P. White, 747 Railway Exchange, Chicago. Next meeting, August 21-23, Hotel Sherman, Chicago. Meeting with International Railroad Master Blacksmiths' Association.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. B. Hutchison, 6000 Michigan Ave., Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMENS' ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Annual convention, September 4-7, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—Bard Browne, Superheater Co., 17 E. 42nd St., New York. Meeting with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Next convention, May 20-23, 1924, Hotel Sherman, Chicago.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—(See A. R. A., Division V.)

MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division V.)

NATIONAL ASSOCIATION OF RAILWAY TIE PRODUCERS.—J. S. Penney, T. J. Moss Tie Company, St. Louis, Mo. Next convention, January 17-18, 1924, Muehlebach Hotel, Kansas City, Mo.

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next convention, Dec. 4, 1923, Miami, Fla.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.

NATIONAL RAILWAY APPLIANCE ASSOCIATION.—C. W. Kelly, People's Gas Bldg., Chicago. Annual exhibition at convention of American Railway Engineering Association.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July and August, at 29 W. 39th St., New York. Annual dinner, December 6, Hotel Commodore, New York.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2d Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Fort Hotel, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.) Railway Electrical Supply Manufacturers' Association. J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—J. W. Foggs, Boss Nut Company, 1732 N. Kolmar Ave., Chicago. Meeting with Traveling Engineers' Association, Sept. 11-14, Hotel Sherman, Chicago.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 16-18, Cleveland, Ohio.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION.—(See A. R. A. Division IV, Signal Section.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A. Division VI.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meeting with A. R. A., Division V.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa. Annual meeting October 18 and 19, Pittsburgh, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next convention, September 18-20, 1923, Chicago. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205 Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—J. L. Carrier, Car Serv. Agt., Tenn. Cent. Ry., 319 Seventh Ave., North Nashville, Tenn.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—H. S. White, 9 N. Jefferson St., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo-Ajax Corporation, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, Ohio. Annual meeting, September 11-14, 1923, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—Pruce V. Crandall, 605 North Michigan Ave., Chicago. Regular meetings, 3d Monday each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, 1735 Monadnock Bldg., Chicago, Ill.

Traffic News

The Great Northern will sell one-way $5 harvest hand tickets from St. Paul to points on its lines in Minnesota and North Dakota until August 15.

The Pere Marquette has ordered two new car ferry steamers from the Manitowoc Shipbuilding Corporation, Manitowoc, Wis., for use on Lake Michigan, the first one to be delivered in March, 1924. These boats will be 360 ft. long over all, 56-ft. beam and draw 16 ft. of water. Each will have on the main deck four tracks holding 26 cars of 42 ft. length. The cost of the two vessels will be about $1,750,000.

The Chicago, Rock Island & Pacific has adopted new regulations for dealing with freight claims. Text books are furnished trainmen and agents containing instructions for proper handling of freight, with a list of the usual causes of loss and damage arranged alphabetically. The freight loss and damage work is now under the Freight Claim Department. A complete record of causes of freight damage will be kept with respect to every train and every station as a means of fixing responsibility for damage.

Cans for eggs, shelled and frozen, are the subject of an investigation which has been made by the Freight Container Bureau of the American Railway Association; and in circular No. 9, just issued, Colonel B. W. Dunn, chief engineer, summarizes the information already obtained and proposes a specification for the construction of cans and of outside containers; and interested parties are invited to make constructive criticisms. The circular deals with all features of the question of safe transportation for frozen eggs in cans.

Western Roads Decline to Reduce Grain Rates

As the result of meetings of the executives of several of the larger roads extending west of Chicago, it has been decided that the request of the Omaha Chamber of Commerce and the Omaha Grain Exchange for a reduction in freight rates on flour and wheat can not be met. At a recent meeting of these Omaha interests it was resolved that, to stimulate wheat and flour buying, the railroads be requested to publish immediately, emergency all-rail rates on wheat and flour shipped from all points in the United States to Atlantic, Gulf and Pacific ports on the basis of 75 per cent of the rates now in effect; these emergency rates to expire on January 30, 1924; that grain shipped on these emergency rates be allowed only one intermediate transit or proportional rate breaking point except that one additional stop may be made for milling purposes and that storage or milling in transit, and also storage at elevators at seaports be limited to 30 days.

On July 27, traffic executives of the larger western roads held a meeting at Chicago to consider the feasibility of complying with this request. This was followed by a meeting of presidents on July 30, who decided that western roads could not make lower rates. The average reduction made by these roads, since 1920 has been 16 per cent. On January 1, 1922, a cut of 16 per cent in wheat and 20 per cent in coarse grain rates was made, making a larger reduction during the last two years than that sustained by lines in any other section of the country.

THE SOUTH MANCHURIA RAILWAY COMPANY which has completed its arrangement with bankers for the flotation of a new loan in the Tokio market is trying to make a similar arrangement either in Wall street or Lombard street subject to the approval of the Japanese government which has a large share in the company. If the official permission is secured British or American financiers will be requested to underwrite a loan amounting to something like $15,000,000.

The proceeds of the new foreign loan the company plans to float are to be used in enlarging the company's blast furnaces, railway shops, harbor accommodations and roadway improvements.

Commission and Court News

Interstate Commerce Commission

The recent order, requiring discontinuance of the present practice of assigning coal cars to individual mines (noticed in the *Railway Age* of July 7, page 33, and July 21, page 132) which was to go into effect on September 1, has been modified by an order making the date October 1.

Telephone Companies Reclassified

The classification made of telephone companies by the Interstate Commerce Commission for accounting purposes has been amended and in the future such companies will be classified as follows:

Class A: Companies having average annual operating revenues exceeding $250,000; Class B: Companies having average annual operating revenues exceeding $100,000, but not more than $250,000; Class C: Companies having average annual operating revenues exceeding $50,000 but not more than $100,000; and Class D: Companies having average annual operating revenues of $50,000 or less.

Southern Pacific Reduces Freight Rates from New York by Water

Application of the same basis of carload rates on more than 200 commodities from the New York piers of the Southern Pacific Company's Morgan line, via the Sunset-Gulf route to points on its railroad in Arizona, New Mexico and California, as in effect from Chicago, September 15, 1922, has been approved by the Interstate Commerce Commission.

An outright reduction in the rates from the New York piers to the Group D basis, which includes Chicago, was disapproved by the commission as various reductions in Group D rates have been made since September 15, the date of the last hearing in this proceeding. To the extent that the schedules proposed by the road have the effect of establishing the Group D basis from the New York piers regardless of changes since September 15, they are ordered canceled without prejudice to the filing of schedules, upon 10 days' notice, which would establish rates from New York no lower than the Group D rates which were in force on that date.

Court News

Origin of Fire Cannot Be Decided on Conjecture

The Oklahoma Supreme Court holds that the conclusion that sparks from a locomotive which passed two hours before a fire occurred in an adjacent cotton gin caused the fire is based solely upon speculation and conjecture and insufficient to base a judgment against the railroad.—Midland Valley v. Rupe (Okla.) 210 Pac. 1038.

Rails on Discontinued Spur Track Are Personalty

The federal district court for the Eastern District of Arkansas holds, in an action to recover the value of rails removed by the defendant railroad from a discontinued side spur on land which had been purchased by the plaintiff, that the rails were personalty, and belonged to the railroad which constructed the spur.—Hubbard v. Missouri Pacific, 288 Fed. 945.

Cannot Condemn Right of Way for Private Spur Track

The Illinois Supreme Court holds that one railroad cannot condemn a right of way over another road's right of way merely to reach and for the exclusive use of a private industrial plant, since this would be taking the property for a private use.—Litchfield & Madison v. Alton & Southern, 305 Ill. 388, 137 N. E. 248.

No Standard of Care in Construction of Trestles

The Circuit Court of Appeals, Fourth Circuit, holds that a railroad was not liable for the death of a flagman who fell from a trestle 15 ft. wide while attempting to board his train, since "no standard of reasonable care requires a railroad so to construct its trestles that they can under all circumstances be safely used by pedestrians when a train is standing on them or moving over them."—Davis v. Shirer, 288 Fed. 293.

Directions to Deliver to Another on Collection Does Not Relieve Consignee of Liability for Freight

The New York Court of Appeals holds that although directions by a consignee to deliver to another, specify that delivery is to be upon collection of the freight charges, the railroad may collect the charges from the original consignee, notwithstanding delivery without collection of charges.—New York Central v. Warren Ross Lumber Co., 234 N. Y. 261,137 N. E. 324.

Unlawful Speed Not Cause of Injury

The Circuit Court of Appeals, Fifth Circuit, holds that where the proximate cause of an injury to plaintiff, a boy under 13 years old, was his attempting to board a rapidly moving freight train in violation of the Missouri statute making it a misdemeanor so to do, the fact that the train was exceeding the speed permitted by a city ordinance was not negligence of the railroad as to the plaintiff, who could not recover.—Clarke v. Illinois Central, 286 Fed. 915.

Boiler Inspection Act

The Circuit Court of Appeals, Sixth Circuit, holds that, while the Interstate Commerce Commission is authorized to make rules and orders in furtherance of the enforcement of section 2 of the Boiler Inspection Act, requiring boilers in operation to be in proper condition, the failure of the Commission to make a rule or order covering every defective condition or construction within the meaning of the section does not relieve the railroad from complying with its provisions.—Baltimore & Ohio v. Groeger, 288 Fed. 321.

Refrigerator Company Not Carrier Entitled to Six Months' Guaranty

The Court of Appeals of the District of Columbia holds that a refrigerator company, which is not incorporated as a carrier, does not hold itself out to perform carriage by publishing rates applicable thereto, and does not in fact perform carriage, or receive compensation from the shippers whose shipments move in its cars, but whose cars are rented to railroad companies, is not a "carrier by railroad" entitled to the six months' guaranty under section 209 of the Transportation Act.—United States ex rel. Chicago, N. Y. & Boston Refrigerator Co. v. Interstate Commerce Commission, 288 Fed. 649.

Freight Overcharges Not Preferred Claims

In proceedings in the federal court in which shippers sought preference for their claims for illegal freight exactions against a railroad company whose property had come into the hands of receivers the federal district court for the Eastern District of Missouri makes the following rulings: A report or opinion of the Interstate Commerce Commission that established rates are unreasonable, without an order to change them, neither authorizes nor permits a departure therefrom. A shipper's remedy for recovery of excessive charges by suit on an order of reparation obtained under the Interstate Commerce Act, §§ 8, 10, is exclusive, and he cannot maintain a suit against the company as trustee ex maleficio of such excess. Claims for overcharges collected five years before the property of the company was impounded for administration by a court of equity are not entitled to preference over prior recorded liens.—North American Co. v. St. Louis, San Francisco Ry. Co., 288 Fed. 612.

Charges for Services Rendered by Shipper to Carrier

The federal district court for the Northern District of Texas holds that under section 15 (8) of the Interstate Commerce Act, as amended, authorizing the Commission to fix a reasonable charge for services rendered by a shipper to a carrier, what is a reasonable allowance to a shipper for hauling its goods to an express company's office on failure of that company to pick them up as required by its tariff, is a question which must first be submitted to the Commission, since any agreement between carrier and shipper would open the door to rebating.—Fulton Bag & Cotton Mills v. American Ry. Express Co., 288 Fed. 854.

Towage of Shippers' Floats May Be Charged for Without Filed Tariff

The Circuit Court of Appeals, Second Circuit, holds that an interstate railroad company can recover for towing a shipper's floats to its terminal, where the service is not a part of the interstate carriage, but accessorial service, and the shipper could have employed any tugboats other than the railroad company's, although no tariff has been filed for such services. In the absence of a published tariff rate, the carrier can recover for services such as this. Section 6 of the Interstate Commerce Act does not forbid the collection of an unpublished rate for services not mentioned therein.—Pennsylvania v. V. M. McGirr's Sons Co., 287 Fed. 334.

Indemnity Bond for Delivery without Surrender of B/L

An indemnity bond was issued to protect a railroad upon its delivery of grain to the consignee though the bill of lading was not surrendered. In an action by the railroad on the bond the Minnesota Supreme Court holds that the bond was not limited to instances where the bill of lading was lost or missing. The bond contained an agreement by the consignee to surrender the bill of lading within five days from the receipt of the grain, which agreement was repeatedly disregarded, though not through fraud, and the railroad did not waive the requirement nor extend the time. It is held that such failure did not release the surety on the bond.—Rock Island v. Theobald Flour Mills Co. (Minn.) 191 N. W. 920.

Decisions Under Federal Employers' Liability Act

The New Jersey Supreme Court holds that a roundhouse employee, employed in taking care of all engines, injured while riding to his place of work on an engine, was within the act.—Matthison v. Payne (N. J.) 118 Atl. 771.

The New York Court of Appeals holds that an employee in the boiler room at a ferry terminus killed by a ferryboat entering the slip by being caught between the apron and the dock while removing an old smoke-stack was within the act.—Hiser v. Davis, 234 N. Y. 300, 137 N. E. 596.

The Indiana Appellate Court holds that an employee injured while engaged in repairing car scales used in weighing interstate and intrastate shipments was not within the act, because the scales had nothing to do with the actual movements of trains.—Chicago, M. & St. P. v. Chinn (Ind.) 137 N. E. 885.

Commission's Mileage Book Order Held Invalid

The Interstate Commerce Commission was directed, under the amendment of section 22 of the Interstate Commerce Act, approved August 18, 1922, to require interstate carrier to issue interchangeable mileage or scrip coupon tickets "at just and reasonable rates." The federal district court for the District of Massachusetts holds that the amendment does not prescribe that such coupons must be issued at a reduced rate, and an order by the Commission requiring the issue of such tickets at reduced rates, even for an experimental period, proceeding upon the theory that the amendment required it to order tickets at reduced rates, and not in the exercise of its own judgment, is without warrant of law. The amendment itself is held constitutional. Permanent injunction restraining enforcement of the order requiring the issue of tickets at reduced rates was granted.—New York Central v. United States, 288 Fed. 951.

Foreign Railway News

100 Killed, 34 Injured in Collision in Germany

A crowded Hamburg-Munich express train collided with a local train at Kreiensen, Germany, on July 31, resulting in the death of 100 persons and injury to 34. The cause of the accident was said to have been the disregarding of a stop signal by the express engineman. His inattention was due to the fact that a cinder had lodged in his eye.

License Taxes for Motor Vehicles in England

Motor vehicles in England paid a total of £10,598,574 during the six months' period ended May 31. The average receipts for a whole year license was £16.18.6 (approximately $80) for cars taxed on horsepower (pleasure cars); £2.11.6 (about $12.50) for motorcycles; £21.7.0 ($103.60) for trucks and £25.11.6 ($121.50) for motor hackneys (taxicabs and buses). These taxes are of course in addition to excise taxes paid by manufacturers.

Japanese Railways to Spend $20,000,000 for Equipment

TOKIO.

The Japanese Department of Railways has decided to spend 40,286,000 yen (approximately $20,000,000) within this fiscal year for the construction of locomotives and cars, which amount shows a decrease of 3,924,000 yen as compared with the previous fiscal year. In the number of locomotives and cars to be built also there is a decrease of 2,443. The number of the locomotives to be built is 197. Last year many electric locomotives were ordered from British and American makers. The number of electric locomotives to be acquired this year is stated to be 27. Soon tenders will be received by the department from various makers whose agents here in Tokio are expected to compete for this business.

Passenger cars are to be built to the number of 485 and 176 electric cars. Only one-half of the goods wagons built last year are to be constructed this year but still their number totals 1,609. The decrease in the building of cars and locomotives does not mean any change toward retrenchment but only a natural result of last two years' active construction and purchase of locomotives and cars, it is stated by authorities.

London & North Eastern's Exhibition of 1923 Pictorial Posters

LONDON.

The London & North Eastern has issued 45 pictorial posters for advertising purposes during the current year and copies of these have been on display in London in the board room of the company for the benefit of those interested.

These posters are all by prominent artists engaged specially for the purpose, and range from simple drawings to what is known as "futurism" in art. The gem of the collection is one entitled "York Minster Windows," by Fred Taylor, R. I., originally exhibited at the Spring Exhibition of the Royal Institute of Painters in Water Colors, and a striking reproduction of the finest example of stained glass in England.

These posters exemplify in a striking manner the application of art to industry referred to by H. R. H. the Prince of Wales at the Royal Academy banquet, and, by reason of their carrying power, are very useful mediums of suggestion to intending travelers. This is particularly the case with those indicating holiday resorts to a public possibly undetermined as to where a vacation shall be spent.

In addition to the posters advertising places of interest there are five by G. E. Studdy, the creator of the unique and original cartoons known as the "Studdy dogs." The five he has done for the London & North Eastern show his comic dog-character "Bonzo" calling the attention of the public to official railway announcements as follows: Seats Reserved, Luggage in Advance, Labeling of Luggage, Thousand-Mile Tickets, and How to Get Your Luggage Home.

Equipment and Supplies

Freight Cars

THE WABASH is inquiring for 150 steel underframe box cars.

THE INLAND STEEL COMPANY is inquiring for six 75-ft. flat cars.

THE ATLANTA & WEST POINT will rebuild 75 box cars in its shops at Montgomery, Ala.

THE MONTOUR RAILROAD is in the market for from 300 to 500 hopper cars of 55 tons' capacity.

THE KAILAN ADMINISTRATION, China, is inquiring through the car builders for 400 gondola cars.

THE AMERICAN SMELTING & REFINING COMPANY is inquiring for two dump cars of 50 tons' capacity.

THE CHESAPEAKE & OHIO is inquiring for three refrigerator cars of 30 tons' capacity for carrying milk.

THE STANDARD OIL COMPANY OF NEW JERSEY has ordered 10 center bottom dump cars from the American Car & Foundry Co.

THE PHILADELPHIA & READING has arranged for the repair of 500 steel hopper cars with the Standard Steel Car Company, at Middletown, Pa.

THE ALABAMA & VICKSBURG is inquiring for from 100 to 200 box cars of 40 tons' capacity; 100 to 200 flat cars of 50 tons' capacity and from 100 to 200 gondola cars to be of 50 tons' capacity.

THE NEW YORK CENTRAL has given a contract to the Standard Tank Car Company for the repair of 500 all-steel hopper cars of 55-tons' capacity for the Pittsburgh & Lake Erie, instead of for converting 500 old box cars to stock cars as was reported in the *Railway Age* of July 28. The conversion of the 500 box cars to stock cars will be carried out by the Standard Steel Car Company.

Passenger Cars

THE LAKE ERIE & WESTERN is having steel center frames and axle lighting equipment installed on 15 coaches in its shops at Stoney Island, Chicago.

Iron and Steel

THE GREAT NORTHERN is inquiring for 2,400 tons of structural steel for bridge work.

THE CHICAGO, BURLINGTON & QUINCY is in the market for 40,000 tons of steel rails.

THE PERE MARQUETTE has ordered 4,000 tons of 90-lb. steel rails from the Bethlehem Steel Company and 9,000 tons from the Illinois Steel Company.

THE PERE MARQUETTE has let a contract for two car ferries to the Manitowoc Ship Building Corporation of Wisconsin, which will require approximately 5,000 tons of steel consisting mostly of plates.

Machinery and Tools

THE VIRGINIAN is receiving bids for a modern railroad ditcher.

THE TEXAS & PACIFIC has ordered a five-ton hand power crane from the Whiting Corporation.

THE ILLINOIS CENTRAL is inquiring for one 20-in. and one 40-in. drill press, one 500-lb. power hammer and one 32-in shaper.

Supply Trade News

P. J. Willis, formerly purchasing agent for the General American Car Company, Chicago, has become associated with the **Coale-Fraser Lumber Company,** Chicago.

H. L. Erlicher, formerly assistant to the general purchasing agent of the **General Electric Company,** Schenectady, New York, has been appointed assistant general purchasing agent.

Negotiations have been completed for the purchase of the Damascus Brake Beam Company, Cleveland, Ohio, by the **American Steel Foundries,** Chicago, the latter exchanging 1½ shares of preferred stock for each share of Damascus common stock.

Walter B. Elcock, formerly district manager in charge of the Atlanta, Ga., office of the **Portland Cement Association,** Chicago, has been appointed assistant general manager in charge of the southeastern offices, with headquarters in the Hurt building, Atlanta.

The Crerar Adams & Company, Chicago, has leased the four-story and basement building at the northwest corner of Morgan and Thirty-sixth street for 10 years with option to purchase, commencing October 21, 1923. The new building will be used by the company both as a warehouse and a general office.

The Surplus Steel Exchange, Inc., New York City, which was recently organized, has opened an office in Chicago at 2257 Oakdale avenue, in charge of **A. E. Thiffault** and **Raymond I. Caspers** both of whom have been affiliated with the steel trade for many years. Mr. Thiffault was formerly with the American Sheet & Tin Plate Company, and Mr. Caspers was formerly with the Illinois Steel Company and the American Sheet & Tin Plate Company.

H. W. Dillon, formerly mechanical inspector in the purchasing department of the Pennsylvania Railroad at Philadelphia, Pa., has been appointed purchasing agent of the **Federated Engineers' Development Corporation,** with office at 154 Ogden avenue, Jersey City, N. J. Mr. Dillon was born on March 19, 1889, at Hollidaysburg, Pa., and was educated in the public schools, Peddie Institute, Hightstown, N. J., and Franklin Institute, Philadelphia.

The Connecticut Blower Corporation, Hartford, Conn., has been incorporated under the laws of Delaware with a capital of $200,000 and has taken over the International Blower Company and the Hartford Sheet Metal Works. The new company will manufacture and install blower systems of all kinds, exhaust fans, dust collecting systems, exhaust systems and ventilating systems. **M. E. Keeney** is president; **C. H. Keeney,** treasurer and **C. E. Keeney,** secretary,—all with headquarters at Hartford, Conn.

The W. N. Matthews Company, manufacturers of mechanical painting equipment and railway electrical specialties, St. Louis, Mo., has been reorganized as the **W. N. Matthews Corporation,** with the same headquarters. **W. N. Matthews** continues as president of the new company and **C. L. Matthews** as vice-president and secretary. **C. C. Fredericks,** general manager of the W. N. Matthews Company has been elected vice-president and general manager of the new corporation and **A. G. Williams** has been appointed manager of railroad sales. Mr. Williams started as a mechanical apprentice in the Altoona, Pa., shops of the Pennsylvania railroad and was promoted through various positions to that of engineer of motive power of the Southwestern region, with headquarters at St. Louis, Mo., which position he resigned on May 1 to take charge of the railroad sales of the mechanical painting equipment of the W. N. Matthews Corporation, St. Louis.

John N. Reynolds

John N. Reynolds, formerly western manager of the *Railway Age*—an announcement of whose death in San Diego, Calif., on July 10 was published in our issue for July 14—was for many years widely known among officers of railways and railway supply companies, especially the latter. He commenced newspaper work with the Boston Advertiser in 1872. In the same year he became associated with Edward Vernon and others in preparing and publishing, in 1873 and 1874, the "American Railroad Manual of the United States and the Dominion." From 1874 to 1881 he was connected with Poor's Manual of Railroads. From 1875 to 1883 he did his first work in the business department of the Railroad Gazette. From 1881 to 1894 he was connected with the National Car and Locomotive Builder; and in 1881 he published the first directory of street railways of the United States, Canada, Mexico and South America. From 1894 to 1901 Mr. Reynolds was western representative of the Railroad Gazette. In May, 1901, he became vice-president of the *Railway Age*, which position he held until May, 1908. On June 1, 1908, the Railroad Gazette, which was published in New York, and the *Railway Age*, which was published in Chicago, were consolidated, and Mr. Reynolds was appointed western manager of the consolidated paper. He continued to hold this position until January, 1913, when he retired, later moving from Chicago to San Diego, Cal., where he lived until the time of his death. Mr. Reynolds' active connection with railroad publications extended over a period of 40 years.

J. N. Reynolds

Mr. Reynolds was born in England August 24, 1846. The accompanying photograph was taken some years ago. We are printing it because none of the later pictures was a true likeness. Again, since Mr. Reynolds retirement more than ten years ago he came in contact with but few of those with whom he had had business relations; so the picture shown will the more quickly recall his memory to those who knew him.

Mr. Reynolds was a lovable man with a quiet, unobtrusive manner and an example in his devotion to his family. Mrs. Reynolds' death some two years ago was a severe blow; but fortunately he had with him up to the time of his death his only surviving child, Mrs. Minnie Reynolds Doud. His one hobby was collecting postage stamps; and at one time there were few better private collections in the country. His incentive was intensified when a grandson came into his life by an ambition to complete and maintain the collection for the boy. That the incentive later died with the little fellow was but an added tribute to his sweet nature.

American Locomotive Company Shows Substantial Profits

A semi-annual statement of operations of the American Locomotive Company for the six months' period ended June 30, 1923, shows gross earnings double those for the previous six months' period and a net available for dividends of $6,972,125 comparing with $2,067,259 for the six months ended December 31, 1922.

The gross earnings for the six months amounted to $45,226,526 and, after deducting from the gross earnings $36,571,855 for the cost of manufacturing, maintenance and administrative expenses, $694,508 for depreciation on the company's plants and equipment and $43,038 for interest on bonds of constituent companies, there remained a net profit of $7,917,125, from which has been deducted an allowance of $945,000 for estimated United States and Canadian federal income taxes, the remaining balance of $6,972,125 being the net available profit for the six month period.

During the six months two quarterly dividends each of $1.75 per share were paid on the preferred stock of the company and one quarterly dividend of $1.50 per share and one of $2.50 per share were paid on the $100 par value common stock, making a total of $1,875,000 in dividend payments, of which $875,000 was paid on the preferred stock and $1,000,000 paid on the common stock. After the payments of the preferred and common dividends, there remained of the available profit $5,097,125, from which a reserve of $1,500,000 was created for additions and betterments to the plants of the company; the remaining sum of $3,597,125 was added to surplus account. The report, signed by Andrew Fletcher, president, gives also the following details:

The inventory account of materials and supplies, contract work in process and stock locomotives and spare parts on hand June 30, 1923, amounted to $16,169,730 as compared with $15,337,873 on December 31, 1922.

During the six months ended June 30, 1923, there was expended for additions and betterments to the plants $1,121,512, which has been charged to the reserves created for such purposes.

The excess of current assets over current liabilities June 30, 1923, was $44,097,848 in comparison with $39,692,245 on December 31, 1922, an increase of $4,405,603. These amounts were obtained after including in current liabilities, reserves for United States and Canadian income and profits taxes and reserves for current shrinkage in value of notes listed in current assets.

The company on June 30, 1923, had no loans payable and had in its treasury on that date in cash and marketable securities $15,279,205, as compared with $15,078,202 on December 31, 1922.

The total unfilled orders on June 30, 1923, amounted to $54,688,031 as compared with $49,349,140 on December 31, 1922. Domestic business at both periods represented about 99 per cent of the unfilled orders. The amount of unfilled business on hand June 30 is sufficient to keep the plants operating at full capacity for the remainder of the year.

The condensed income account of the American Locomotive Company and its subsidiaries for the six months ended June 30, 1923, as compared with the six months ended December 31, 1922, follows:

	Six months to June 30, 1923	Six months to Dec. 31, 1922	Increase
Gross earnings	$45,226,526	$21,722,179	$23,504,347
Manufacturing, maintenance and administrative expenses and depreciation	37,266,363	19,412,136	17,854,227
Gross profit	$7,960,163	$2,310,043	$5,650,120
Interest on bonds of constituent companies, etc.	43,038	42,784	254
Net profit	$7,917,125	$2,267,259	$5,649,866
Deduct for United States and Canadian income taxes	945,000	200,000	745,000
Available profit	$6,972,125	$2,067,259	$4,904,866
Dividends on preferred stock	875,000	875,000	.....
Dividends on common stock	1,000,000	750,000	250,000
	$5,097,125	$442,259	$4,654,866
Reserved for additions and betterments	1,500,000	.....	1,500,000
Surplus	$3,597,125	$442,259	$3,154,866

Trade Publications

LOCOMOTIVE CHART.—The Johns-Pratt Company, Hartford, Conn., is distributing a chart of a passenger type Mountain, or 4-8-2, locomotive on which the principal parts are numbered. Below the chart is a key giving the names of 385 parts with reference to I. C. C. rules in the "Laws, rules and instructions for inspection and testing locomotives."

TRACK DRAINAGE.—The W. S. Dickey Clay Mfg. Company, Kansas City, Mo., jointly with the Chattanooga Sewer Pipe Works, Chattanooga, Tenn., the Macomb Sewer Pipe Works, Macomb, Ill., the Macon Sewer Pipe Works, Macon, Ga., the San Antonio Sewer Pipe Works, San Antonio, Tex., the Southern Sewer Pipe Works, Birmingham, Ala., and the Texarkana Pipe Works, Texarkana, Tex., has issued a 60-page booklet devoted to track drainage. Information is given concerning the weights of different locomotives and other loadings on track and methods of meeting drainage problems under varying conditions are outlined.

Railway Construction

ALEXANDRIA & WESTERN.—This company is reported to be calling for bids for the construction of a five mile extension at Alexandria, La.

AMERICAN NIAGARA.—This company has applied for authority to construct a new line about 10 miles in length in Erie county, N. Y., from a connection with the New York Central at its junction with the Lehigh Valley at Tonawanda Junction and connecting with the railroad of the Canadian Niagara Bridge Company at the international boundary in the Niagara river. The applicant represented that improvements are to be made upon the Rochester division, Tonawanda branch, of the New York Central and a suitable connection made with the West Shore at Akron Junction. These improvements and this connection, with the construction proposed by the applicant and of the Canadian Niagara Bridge Company, will open for the use of through traffic the line of the West Shore, which is a heavy tonnage road, but not now used to capacity and will relieve the congestion in the yards of the New York Central at Black Rock, thereby shortening the time of freight traffic east and west, the application stated. The applicant is a corporation organized to construct and operate a railroad, but is not an operating corporation. A. H. Smith, president of the New York Central lines, is president of the new company.

CENTRAL OF BOLIVAR.—The state of Bolivar in Colombia, South America, is said to contemplate the construction of a railway 300 miles long, standard gage, from Cartagena through the state of Bolivar to a connection with a similar railway of the state of Antioquia, both roads forming links in a system giving a direct rail route to Bogota, the national capital. Construction will be financed by the issue of state bonds and contractors are being sought. A. L. Cameron, attorney at law, 49 Garden place at State street, Brooklyn, N. Y., can arrange interviews with proper persons for contractors interested.

CHICAGO, BURLINGTON & QUINCY.—This company, jointly with the Chicago & Alton, contemplates the construction of a union passenger station at Jacksonville, Ill.

FRUIT GROWERS' EXPRESS.—This company will build an icing station on the lines of the Pennsylvania at Huntington, Pa.

KANSAS CITY SOUTHERN.—This company will rebuild its car repair shop at Shreveport, La., which was damaged by fire on July 11, with a loss estimated at $125,000 including equipment.

LOUISVILLE & NASHVILLE.—This company has been ordered by the Illinois Commerce Commission to construct a new concrete bridge over its tracks at Lebanon avenue, Belleville, Ill., to replace a wooden bridge which was condemned eight months ago. The new structure will cost $25,000, of which the city of Belleville will pay $8,000.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—This company will close bids on August 6 for the construction of an eight-story office building at Nashville, Tenn.

PENNSYLVANIA.—This company has awarded a contract to the Roberts and Schaefer Company, Chicago, for the construction of a 700-ton reinforced concrete coaling plant with duplicate elevating equipment and a 120-ton gravity sand plant for installation at Conemaugh, Pa.

ST. LOUIS-SAN FRANCISCO.—This company has awarded a contract to the Hewlett Construction Company, Moline, Ill., for the construction of a 300-ton, three-track, reinforced concrete coaling station at the Lindenwood yard, St. Louis, Mo., as reported in the *Railway Age* of July 7.

UNION PACIFIC.—This company plans the construction of a new passenger station at Long Beach, Cal., and is also constructing a new water treating plant at Marysville, Kan.

WABASH.—This company is making preparations for the elevation of its tracks at Lafayette street, Fort Wayne, Ind.

Railway Financial News

CANADIAN NATIONAL.—*Equipment Notes.*—The Canadian National issue of $22,500,000 guaranteed 5 per cent 15-year equipment bonds has been awarded by the Minister of Finance to a Toronto syndicate headed by A. E. Ames & Co., Wood, Gundy & Co., and Dominion Securities Corporation, Ltd. The rate paid was 97.889 per cent and accrued interest.

CHICAGO & EASTERN ILLINOIS.—*Annual Report.*—This company's annual report for 1922 is reviewed in an article on another page of this issue entitled "Chicago & Eastern Illinois Improves Rapidly." See also excerpts from annual report on adjacent page.

CHICAGO, PEORIA & ST. LOUIS.—*Loan Disapproved.*—This company's application for a loan of $1,000,000 for 10 years from the government under Section 210 of the Transportation Act, has been denied by the Interstate Commerce Commission. Application was made by Bluford Wilson and William Cotter, receivers, to meet maturing indebtedness and to make additions and betterments.

To be sold September 26.—Master in Chancery Charles Briggle, of the Sangamon County (Ill.) Circuit Court, announced that the time for the sale at public auction of the Chicago, Peoria and St. Louis Railroad, has been tentatively set for September 26.

GREAT NORTHERN.—*Earnings Position.*—Dividend checks mailed to stockholders this week were accompanied by a statement by Ralph Budd, president, urging co-operation in defending the railroads from harmful legislation and containing also an analysis of the annual report, which shows, among other things, that rate reductions have absorbed about 60 per cent of the road's potential dividends. The statement said:

> Certain politicians announce their intention to force reductions in rates, regardless of consequences, with the evident intent of breaking down the railroads by proving that they are unable to meet these added costs and expenses, thus forcing government ownership.
>
> Stockholders of the Great Northern Railway number about 45,000, and substantially each of you has a vote. In addition to this, of course, you have considerable influence which can be extended and broadened by giving to your friends who are voters the facts in regard to the railroads, and especially this railroad. You should keep in touch with your representative and senators in Congress, as well as your state legislators, and if they are reasonable men and have the facts before them they are not likely to favor government ownership or to favor the passage of legislation harmful to the railroads.
>
> Never has this railroad needed your assistance in disseminating the facts as much as at the present time.

With reference to the 1922 net the statement shows that although operating expenses were reduced by $5,724,616, revenues for the year declined by $7,969,045 as a result of rate reductions. The total dividends received by stockholders amounted to $13,097,264, and payments by the road in taxes were 61.8 per cent of this amount, or $8,097,725. The statement said:

> This reduction in rates was made notwithstanding the fact that return on property was below the fair return fixed by the transportation act. To state it in another way: Taxes consumed 34 per cent of the net revenue from railroad operations. Had the reduction in expenses not been taken by the public through rate reductions, the return on the property devoted to public use would have increased from 3.47 per cent to 4.61 per cent.

GULF, COLORADO & SANTA FE.—*Would Purchase Galveston & Western.*—This company has sought authority from the Interstate Commerce Commission to purchase the properties of the Galveston & Western in Galveston, Tex., for $55,000 and thereafter to operate the line previously operated by the applicant under a trackage agreement. It was stated that extensions will be made to develop the western portion of the city if purchase is approved.

HOCKING VALLEY.—*Equipment Trust.*—This company has applied for authority to issue $4,020,000 of 5 per cent equipment trust gold certificates dated April 1, 1923 and to mature in 15 equal annual installments on April 1 from 1924 to 1938. The certificates have been sold to J. P. Morgan & Co., subject to the commission's approval, at 94.843. The proceeds will be applied to the purchase of 2,000 gondola cars estimated to cost $5,098,000.

KANSAS CITY TERMINAL.—*Note Issue Proposed.*—This company has applied to the Interstate Commerce Commission for authority to issue not less than $9,850,000 and not more than $10,500,000 of notes to be secured by $13,783,000 of the applicant's first mort-

gage 4 per cent gold bonds due January 1, 1960. The notes are to be sold to or through Lee, Higginson & Co. and associated banks when a favorable market is secured, interim certificates to be issued in the meantime upon such sales as are made. The proceeds will be used to retire the $9,850,000 of the applicant's 6 per cent gold notes maturing November 15. The new notes will bear that date, maturing not more than 5 years thereafter with interest at not less than 5 per cent and not more than 6 per cent, the exact rate to be determined later.

LEHIGH VALLEY.—*Authentication of Bonds.*—This company has been authorized to procure authentication and delivery to its treasurer of $6,000,000 of general consolidated mortgage bonds.

MINNEAPOLIS & ST. LOUIS.—*Receiver Appointed.*—W. H. Bremner, hitherto president of the Minneapolis & St. Louis, was on July 27 appointed receiver. Receivership followed the filing of a petition in the federal district court by the Minneapolis Steel & Machinery Company setting forth indebtedness of about $15,000 for repairs to locomotives and cars. The railroad company promptly filed an answer to the petition admitting its insolvency and consenting to the appointment of a receiver.

The Minneapolis & St. Louis was reorganized in 1916. It has failed to meet its fixed charges for the past five years, the deficit in 1922 being $1,161,924 and in 1921 $1,836,223. In the first five months of 1923 net after rents was $464,238. This compared with $201,955 in the same period of last year but was represented nevertheless with a small proportion of total fixed charges. The company would have been called upon to pay about $700,000 interest charges on September 1. It had on previous occasions met this payment by borrowing money which it repaid after the grain movement.

The company has outstanding $25,792,600 capital stock and $46,833,615 funded debt. A protective committee has been organized for the M. & St. L first and refunding 4 per cent bonds (total outstanding $13,244,000) and for the Iowa Central issues. F. J. Lisman & Co. are organizing a protective committee for the Des Moines & Fort Dodge 4's.

W. H. Bremner, the receiver, said in commenting on the receivership: "Our financial difficulties have been brought about by general conditions affecting the northwest railroads. In the last two or three years we have not shared in the prosperity which has accrued to the southern and eastern railroads."

MISSOURI-KANSAS-TEXAS.—*Lease of Line.*—See Wabash.

MORRISTOWN & ERIE RAILROAD.—*Mortgage Extension.*—This company has applied to the Interstate Commerce Commission to renew and extend for 10 years from September 1 next its first mortgage 5 per cent gold bonds, amounting to $300,000, to increase the interest rate thereon to 6 per cent and to reduce the premium payable upon redemption before maturity from 10 per cent above par to 5 per cent for the first 7 years of the renewal period and to 2½ per cent for the balance of that period. The bonds originally were issued by the applicant Sept. 1, 1903. When the bonds mature September 1 the sinking fund accumulated will have amounted to $100,000 but the applicant represented in proposing extension that it has not sufficient funds immediately available to pay off the principal not held in the sinking fund.

PENNSYLVANIA.—*Asks Lease of Pennsylvania-Detroit.*—This company has applied to the Interstate Commerce Commission for authority to acquire control by 999-year lease of the Pennsylvania-Detroit Railroad Company, which owns and operates a line in Michigan, from a connection with the Pere Marquette at Carlton, a distance of about 20 miles to a connection with the Wabash at Detroit, and has trackage rights over the Pere Marquette from Carlton to Alexis Junction, Ohio, and in connection with trackage rights over the Ann Arbor, exercised by the Toledo, Columbus & Ohio, reaches Toledo, thus providing a through and direct route via the Pennsylvania System to and from Detroit.

ST. LOUIS-SAN FRANCISCO.—*New Directors.*—Colonel Robert M. Thompson of New York, and Grant R. McCullough of Tulsa, Okla., have been elected directors succeeding J. W. Kendrick and A. L. Shapleigh, resigned.

ST. LOUIS SOUTHWESTERN.—*Annual Report.*—The anual report issued this week shows a net after fixed charges of $2,256,679 or $221,006 less than for 1921. Net operating income of $5,261,850 in 1922 compared with $5,492,034 in 1921. A selection of the principal items in the income account follows:

	1922	1921	Increase or decrease
Average miles of road operated	1,776	1,786	—10
Operating revenues:			
Freight	$22,297,232	$20,837,819	$1,459,412
Passenger	2,686,794	3,089,891	—403,097
Total operating revenues	26,159,914	25,153,462	1,006,453
Operating expenses:			
Maintenance of way and structures	4,299,557	3,962,520	337,037
Maintenance of equipment	4,831,299	4,415,772	415,527
Traffic	740,968	800,444	—59,475
Transportation	9,091,602	8,764,729	326,873
General	1,012,327	1,094,235	—81,908
Total operating expenses	20,007,426	19,112,553	894,873
Net operating revenue	6,152,489	6,040,909	111,580
Net operating income	4,455,657	4,786,085	—330,428
Total non-operating income	286,618	214,824	71,794
Gross income	4,742,275	5,000,909	—258,634
Total deductions from income	2,485,597	2,523,224	—37,628
Net income	2,256,679	2,493,482	—236,803
Disposition of net income:			
Income applied to sinking funds	257,323	.....	257,323
Inc. appropriated for invest. in physical property	1,999,356	2,493,482	—494,126
Total	2,256,679	2,493,482	—236,803
Income balance transferred to profit and loss	.....	—15,796	15,796

SANTA FE & LOS ANGELES HARBOR.—*Asks Permission to Issue Stock.*—Application to the Railroad Commission of California for authority to issue $50,000 of common stock has been made by the Santa Fe & Los Angeles Harbor, a subsidiary of the Atchison, Topeka & Santa Fe. The funds obtained are to be used in the construction of a 13-mile branch line from El Segundo, Cal., to Wilmington. The proposed stock issue will be taken over by the Santa Fe, which has applied to the commission for authority to lease the new line when it has been built.

SEABOARD AIR LINE.—*Nominal Issue Proposed.*—This company has applied for authority nominally to issue $2,700,000 of refunding mortgage bonds to reimburse its treasury for capital expenditures. The bonds represent the annual allotment for 1920 which the applicant is entitled to draw down under its refunding mortgage. They will be pledged with the Guaranty Trust Company of New York, trustee of the applicant's first and consolidated mortgage for the purpose of drawing down first and consolidated mortgage bonds to an amount equal to the fair market value of the refunding bonds so deposited up to the face amount of the applicant's expenditures. The applicant's proposed financing does not involve the sale of securities.

WABASH.—*Lease of M-K-T Line Approved.*—This company has been authorized to acquire control under a 99-year lease from July 1, of a line owned by the Missouri-Kansas-Texas extending from Moberly to Hannibal, Missouri, a distance of about 70 miles, provided that nothing in the commission's order of authorization shall be construed as permitting the Wabash to purchase the property. The commission stated that all matters relating to the purchase of the property will be deferred. If and when the Wabash elects to exercise the option of purchase at $2,400,000 granted by the proposed lease it must file an appropriate application with the commission.

Under the lease the Wabash will pay an annual rental of $120,000, approximately equal to a 5 per cent return on the value of the property. In addition operating expenses and taxes will amount to an estimated total of $531,591 annually. Besides its present revenue the Wabash will receive all revenue on traffic handled exclusively by the Missouri company, estimated to be $176,028 a year. It is stated that the lease will enable the Wabash to effect an annual saving of about $50,000.

Trend of Railway Stock and Bond Prices

	July 31	Last Week	Last Year
Average price of 20 representative railway stocks	57.80	60.88	68.98
Average price of 20 representative railway bonds	82.23	82.63	88.36

Annual Report

First Annual Report of the Chicago and Eastern Illinois Railway Company

Year ended December 31, 1922.

To the Stockholders:

The board of directors submit herewith their report of the operations and affairs of the Chicago and Eastern Illinois Railway Company for the year ended December 31, 1922.

The Company took possession of its property and commenced railroad operations January 1, 1922, and the results of its operations were as follows:

Railway operating revenues	$24,731,347.86
Railway operating expenses	21,134,733.33
Net revenue from railway operations	$3,596,614.53
Railway tax accruals and uncollectible railway revenues	1,160,738.63
Railway operating income	$2,435,875.90
Equipment and joint facility rents—net	285,593.27
Net railway operating income	$2,721,469.17
Miscellaneous income	393,788.58
Gross income	$3,115,257.75
Interest, rentals, miscellaneous and sinking fund charges	2,512,581.60
Surplus for the year	$602,676.15

The year 1922 presented most unusual conditions. The volume of freight traffic carried during the year was less than for 1921, there being a decrease of 8.22% in tons of revenue freight. Freight decreased 10%, the result of the business depression, the strike of the coal miners, the strike of the railway mechanical crafts, the reduction in freight rates, and a decrease in miles of road operated. The following statement indicates the tonnage of coal and other freight handled compared with 1921.

	1922 Tons	1921 Tons
Coal freight handled	5,984,380	7,528,220
Other freight handled	5,774,855	5,284,478
All freight handled	11,759,235	12,812,698

The general business depression which prevailed throughout 1921 continued during the first three months of 1922, and, although the shut-down of the mines served by this company was expected on April 1st with the expiration of the wage agreement, the coal tonnage moved during January, February and March was below the average for the same months of other years when the wage agreements of the miners expired March 31st. On April 1st all of the mines discontinued operation and did not resume until August 23, practically five months, as it required some days after the date the settlement became effective for the mines to get back to tonnage production. For 1921 bituminous coal was 58.57% of all freight handled, while for 1922 it was 50.9%. The difference represents a decrease of 1,543,840 tons.

On July 1st the mechanical crafts left the service in protest against a decision of the United States Railroad Labor Board. They had no particular grievance against this company. More than 50% of the supervising foremen joined the mechanics in the strike. Traffic was light, the result of the coal strike and the general depression in business. This company's equipment was in good condition, 39% of the coal cars and 34 locomotives being stored on the road ready for service when the mines resumed work. The officers, therefore, decided not to make an effort to fill the strikers' places but to await developments. The handling of locomotives at terminals and the inspection and making of light repairs to cars was taken care of by the official classes of the mechanical department and by volunteers from other departments. Early in July it became apparent that the company could not permit any of the foremen and many of the men on strike to re-enter the service on account of their interference with employees who had refused to join them in the strike and their efforts to damage this company's property. On August 1, upon advice from the coal operators that the resumption of mining was imminent, this company began employing men to take the places of the strikers—both skilled mechanics and young men who were anxious to learn the mechanical trade but under the restrictions placed by the old organizations could not do so—and continued this policy until a full force was recruited. Acting under the instruction of the United States Railroad Labor Board, these forces have organized company unions to handle their affairs.

During the summer and fall of 1921, the Interstate Commerce Commission was besieged with requests for reduction in rates, and on November 23, 1921, instituted a general rate investigation. On January 1, 1922, the carriers made a voluntary reduction on all products of the farm, range and orchard. On May 24, 1922, the Interstate Commerce Commission announced its opinion in the general rate investigation, finding that freight rates and charges would be unreasonable on and after July 1, 1922, to the extent that they exceeded the rates in effect August 25, 1920, by specified percentages. The effect was a reduction of ten percent in this company's freight rates on farm products, January 1, 1922, and approximately ten per cent on other freight, July 1, 1922.

This company did not acquire the Chicago and Indiana Coal Railway, and, as a result, the miles of road operated decreased 185.68 or 16.42%.

Passenger revenue decreased 9.30%, passengers carried one mile decreased 10.88%, and passenger train miles decreased 9.92%. Passenger revenue per mile of road increased 8.49% the result of the discontinuance of the operation of the Chicago and Indiana Coal Railway.

The total operating revenue decreased 8.7% and the total railway operating expenses 11.7%. The decrease in the expenditures for maintenance of equipment was the result of working reduced forces short time during the first six months of the year on account of the business conditions, and to the strike of the mechanical crafts, during the last six months. The decrease in transportation expenses was the result of less business handled.

Transportation expenses were materially affected by the purchase of coal for locomotive use during the last two months of the coal miners' strike. Sufficient coal to operate for three months was stored prior to the strike, it being the opinion that the strike would not last until July 1st. During the latter part of June it became necessary to purchase coal in Kentucky paying a high price per ton and freight charges. This resulted in an increase of $401,000 to transportation expenses.

Equipment changes during the year consisted of the purchase of ten new Mikado locomotives, Nos. 1940 to 1949, inclusive, which were placed in service during November and December, at a cost of	$471,330.24
Two second hand service cars at a cost of	3,500.00
Betterments to existing equipment at a cost of	185,104.44
Total	$659,934.68
Less retirements during the year of 142 units valued at	101,760.00
Leaving net additions and betterments to equipment as	$558,174.68

During the year there were a total of eleven new industries located on this company's line, representing an investment for the industries of $193,500. It is expected that these industries will furnish employment for 255 men and will produce in and out-bound traffic of about 1,750 cars annually.

Wherever necessary to round out the periods for comparative purposes, or continued comparison with prior years, the operations of the predecessor company and its Receivers have been included.

By order of the Board of Directors.

May 15, 1923.

W. J. JACKSON,
President.

INCOME ACCOUNT

Year Ended December 31, 1922, Compared With Previous Year

	1922	1921	Increase or Decrease Amount	Per Cent
Average mileage operated	945.13	1,130.81	—185.68	—16.4
Operating revenue:				
Freight	$18,257,138.38	$20,282,431.14	—$2,025,292.76	—10.0
Passenger	4,580,655.31	5,051,668.70	—471,013.39	—9.3
Excess baggage	35,251.38	38,254.22	—3,002.84	—7.8
Parlor and chair car	9,287.75	10,514.60	—1,226.85	—11.7
Mail	634,387.45	‡738,957.30	—104,569.85	—14.2
Express	575,085.27	287,623.63	$287,461.64	99.9
Other passenger train	45,240.98	21,420.81	23,820.17	111.2
Milk	63,155.86	8,075.08	55,080.78	682.1
Switching	240,477.73	340,247.18	—99,769.45	—29.3
Special service train	7,618.98	15,555.92	—7,936.94	—51.0
Other freight train	344.50	2,129.00	—1,784.50	—83.8
Total revenue from transportation	$24,448,643.59	$26,796,877.58	—$2,348,233.99	—8.8
Revenue from operation other than transportation	282,704.27	302,268.57	—19,564.30	—6.5
Total railway operating revenue	$24,731,347.86	$27,099,146.15	—$2,367,798.29	—8.7
Operating expenses:				
Maintenance of way and structures	$2,782,200.87	$2,772,460.87	$9,740.00	.4
Maintenance of equipment	6,567,569.89	8,572,405.33	—$2,004,835.44	—23.4
Traffic	508,835.41	441,521.87	67,313.54	15.2
Transportation—rail line	10,354,312.44	11,163,434.95	—809,122.51	—7.2
Miscellaneous operations	148,712.18	163,117.46	—14,405.28	—8.8
General	792,108.67	838,654.34	—46,545.67	—5.6
Transportation for investment—Cr.	—19,006.13	—7,190.12	11,816.01	164.3
Total railway operating expenses	$21,134,733.33	$23,944,404.70	—$2,809,671.37	—11.7
NET REVENUE FROM RAILWAY OPERATIONS	$3,596,614.53	$3,154,741.45	$441,873.08	14.0
Railway tax accruals	$1,155,000.00	$1,210,000.00	—$55,000.00	—4.5
Uncollectible railway revenue	5,738.63	6,060.11	—321.48	—5.3
Total	$1,160,738.63	$1,216,060.11	—$55,321.48	—4.5
Railway operating income	$2,435,875.90	$1,938,681.34	$497,194.56	25.6
Equipment rents—net				
—Cr.	$906,098.70	$926,115.18	—$20,016.48	—2.2
Joint facility-rent—net —Dr.	620,505.43	711,214.14	—90,708.71	—12.8
Total—net	$285,593.27	$214,901.04	$70,692.23	32.9
NET RAILWAY OPERATING INCOME	$2,721,469.17	$2,153,582.38	$567,886.79	26.4
Miscellaneous income	$393,788.58	$780,295.25	—$386,506.67	—49.5
Gross income	$3,115,257.75	$2,933,877.63	$181,380.12	6.2
Deductions from income:				
Interest	$2,297,018.27	$801,272.25	$1,495,746.02	186.7
Miscellaneous rents	5,797.10	6,713.85	—$916.75	—13.7
Miscellaneous tax accruals	15,000.00	.....	15,000.00	.....
Miscellaneous income charges	10,098.73	9,179.01	919.72	10.0
Total deductions	$2,327,914.10	$817,165.11	$1,510,748.99	184.9
Net income	$787,343.65	$2,116,712.52	—$1,329,368.87	—62.8
Income applied to sinking and other reserve funds	184,667.50	.....	$184,667.50	.....
Balance of income	$602,676.15	$2,116,712.52	—$1,514,036.37	—71.5

‡ Includes $96,185.05 additional mail revenue earned in prior years.

[ADVERTISEMENT]

Railway Officers

Executive

Charles S. Goldsborough, assistant to the president of the Erie, has resigned, effective August 1, to engage in other business.

A. D. Aiken has been elected vice-president of the Rock Island-Frisco Terminal, with headquarters at St. Louis, Mo., succeeding M. M. Sisson, who has resigned.

Thomas H. Beacom, formerly vice-president of the Chicago, Rock Island & Pacific, has been appointed receiver of the Denver & Rio Grande Western, succeeding Joseph H. Young, president of the property, who has resigned.

E. M. Fairfield has been appointed assistant to the vice-president of the traffic department of the Chicago, Burlington & Quincy, with headquarters at Chicago. Mr. Fairfield will have special duties connected with the public relations of the Burlington.

E. F. Flynn, whose appointment as assistant to the vice-president and general counsel of the Great Northern, with headquarters at St. Paul, Minn., was reported in the *Railway Age* of July 21, was born on November 15, 1875, at Faribault, Minn. He graduated from the University of Minnesota, College of Law, in 1896 and engaged in general law practice after being admitted to the bar. Mr. Flynn's first railway service was with the Great Northern as local attorney at Devils Lake, N. D., which appointment he received on August 1, 1905. He was general counsel for the Farmers Grain & Shipping Company, a road built by the farmers of Ramsey and Towner counties, N. D., while it was being extended in 1905. Up to the time of his appointment as assistant to the vice-president and general counsel of the Great Northern, Mr. Flynn was engaged in the practice of law at Faribault, Minn., and at Devils Lake. In his new position, he will have charge of the Public Relations bureau of the Great Northern.

E. F. Flynn

Geo. D. Perry, vice-president and general manager of the Canadian National Telegraphs, has retired and **Geo. C. Jones** has been appointed general manager of the telegraph and telephone department of the Canadian National Railways, including the Canadian National Telegraphs, with headquarters at Toronto, Ont., effective August 1.

E. E. Cain, general superintendent of the Pere Marquette, has been appointed assistant to the president and general manager. As such he will have immediate supervision over the freight claims department, public relations, the employment bureau, safety and other assigned duties. **A. L. Grandy,** assistant to the president and general manager, whose assigned duties are more particularly of an engineering nature, will in addition to his present work, also have charge of the land and tax department.

Operating

W. L. Booth, superintendent of transportation of the Chesapeake & Ohio with headquarters at Richmond, Va., has been promoted to chief of yard and terminal operations. **A. T. Lowmaster,** assistant superintendent of transportation, has been promoted to superintendent of transportation.

A. E. Badger, assistant to the general manager of the Pere Marquette, has been appointed general superintendent. **A. J. Minard** has been appointed assistant general superintendent. **E. D. Hawley,** superintendent of freight claims and police, has been appointed superintendent of transportation. **W. J. Hargis** has been appointed superintendent of freight claims and police.

N. A. Ryan, trainmaster of the Terre Haute division of the Chicago, Milwaukee & St. Paul, with headquarters at Terre Haute, Ind., has been promoted to assistant superintendent, with the same headquarters, succeeding M. J. Griffen, who has resigned. **L. B. Beckwith** has been appointed trainmaster of the Terre Haute division, with headquarters at Terre Haute, Ind., succeeding Mr. Ryan.

A. DeBernardi, vice-president and general manager of the Kansas City, Mexico & Orient, with headquarters at Wichita, Kan., has resigned as general manager but will retain his position as vice-president. Mr. De Bernardi's resignation was brought about by ill health. Announcement of the appointment of E. H. Shaufler, general traffic manager, as acting general manager, with headquarters at Wichita, Kan., was reported in the *Railway Age* of July 28.

J. D. Farrington, superintendent of the St. Joseph division of the Chicago, Burlington & Quincy, with headquarters at St. Joseph, Mo., has been transferred to the Aurora division, with headquarters at Aurora, Ill., succeeding **C. D. Peckenpaugh,** whose promotion to general superintendent of the Missouri district, with headquarters at St. Louis, Mo., was reported in the *Railway Age* of July 14. **W. T. Sadler,** superintendent, of the Creston division, with headquarters at Creston, Iowa, has been transferred to the St. Joseph division, with headquarters at St. Joseph, Mo., succeeding Mr. Farrington. **H. D. Brown,** acting superintendent of the Aurora division, with headquarters at Aurora, Ill., has been promoted to superintendent of the Creston division, with headquarters at Creston, Iowa, succeeding Mr. Sadler.

C. D. Peckenpaugh, whose promotion to general superintendent of the Missouri district of the Chicago, Burlington & Quincy, with headquarters at St. Louis, Mo., was reported in the *Railway Age* of July 14, was born on February 28, 1878, at Logan, Iowa. He entered railway service in September, 1889, as an operator on the McCook division of the Burlington and in August, 1895, was transferred to the Alliance division. He was promoted to dispatcher at Alliance, Neb., in September, 1898, and in December, 1905, was promoted to chief dispatcher at Sterling, Colo., being transferred again to Sheridan, Wyo., in October, 1906. Mr. Peckenpaugh was promoted to trainmaster, with headquarters at Sheridan, Wyo., in July, 1909, and in February of the following year, was promoted to superintendent of the Sterling division, with headquarters at Sterling, Colo. He was transferred to the Sheridan division, with headquarters at Sheridan, Wyo., in November, 1911, and in March, 1915, was transferred to the McCook division, with headquarters at McCook, Neb. In June, 1917, Mr. Peckenpaugh was transferred to the Aurora division, with headquarters at Aurora, Ill. In March, 1923, he was promoted to acting general superintendent of the Missouri district, with headquarters at St. Louis, Mo., which position he held at the time of his recent appointment as general superintendent.

Traffic

V. W. Baker has been appointed district passenger agent for the Wabash with headquarters at Houston, Tex.

T. E. Roberts has been appointed assistant European manager of the department of colonization and development of the Canadian Pacific, with headquarters at London, England.

W. S. Merchant, general agent for the St. Louis-San Francisco, with headquarters at Chicago, has been promoted to general eastern agent, with headquarters at New York. **W. B.**

Wells, general freight and passenger agent, with headquarters at Ft. Worth, Tex., has been appointed general agent, with headquarters at Chicago, succeeding Mr. Merchant.

J. M. Scott, general passenger agent of the Southern Pacific with headquarters at Portland, Ore., has been promoted to assistant passenger traffic manager with the same headquarters. **J. A. Ormandy,** assistant general passenger agent with headquarters at Portland, has been promoted to general passenger agent with the same headquarters, succeeding Mr. Scott. **C. W. Stinger,** city ticket agent at Portland, has been promoted to assistant general passenger agent with the same headquarters, succeeding Mr. Ormandy. **J. H. Mulchay,** general freight agent with headquarters at Portland, has been promoted to assistant freight traffic manager with the same headquarters. **W. F. Miller,** assistant general freight agent with headquarters at Portland, has been promoted to general freight agent with the same headquarters, succeeding Mr. Mulchay. **C. M. Andrews,** district freight and passenger agent with headquarters at Seattle, Wash., has been promoted to assistant general freight agent with headquarters at Portland, Ore., succeeding Mr. Miller. **L. A. Brockwell,** traveling agent with headquarters at Seattle, has been promoted to district freight agent with headquarters at Portland, Ore. **Carl Taylor,** traveling agent with headquarters at Seattle, Wash., has been promoted to general agent with the same headquarters. **I. T. Sparks,** district freight and passenger agent with headquarters at Eugene, Ore., has been transferred to Merced, Cal. **L. L. Graham** has been appointed district freight and passenger agent with headquarters at Eugene, Ore., succeeding Mr. Sparks. **A. A. Mickel** has been appointed district freight and passenger agent with headquarters at Salem, Ore. **A. S. Rosenbaum** has been appointed district freight and passenger agent with headquarters at Medford, Ore. **J. J. Miller** has been appointed district freight and passenger agent with headquarters at Klamath Falls, Ore., **Press Bancroft,** district freight and passenger agent with headquarters at Salt Lake City, Utah, has been promoted to general agent with the same headquarters.

Special

G. A. Bryant has been appointed chief fire inspector of the Chicago, Rock Island & Pacific, reporting to Carl Nyquist, vice-president.

Hal S. Ray, assistant to the president of the Chicago, Rock Island & Pacific, with headquarters at Chicago, has been appointed director of personnel and public relations, with the same headquarters. **A. B. Ramsdell,** assistant vice-president in charge of labor, with headquarters at Chicago, has been appointed assistant director of personnel, with the same headquarters. **W. E. Babb,** editor of the Rock Island Magazine, with headquarters at Chicago, has been appointed assistant director of public relations, with the same headquarters.

Obituary

H. B. Cartwright, district engineer of the Seaboard Air Line with headquarters at Jacksonville, Fla., died in that city on July 14.

E. H. Morse, assistant superintendent of the New York, New Haven & Hartford at Boston, Mass., was killed on July 31, at Boston, Massachusetts, when he was struck by an automobile.

William E. Canning, Superintendent of the Long Island, died on July 31 at his home, Jamaica, Queensboro, New York City. Mr. Canning was born at Jamaica on Feb. 5, 1867, and was educated in the public schools there. Forty-three years ago, at the age of thirteen, he entered the employ of the Long Island as messenger boy in the train dispatcher's office at Jamaica. While so employed, he studied telegraphy, and in the early part of 1882 was appointed telegraph operator. On May 1, 1885, Mr. Canning was made towerman; April 1, 1888, train dispatcher; June 1, 1899, chief train dispatcher; March 11, 1904, assistant trainmaster; February 1, 1910, freight trainmaster; October 1, 1917, assistant superintendent. When the period of federal control of railroads ended on March 1, 1920, the transportation department of the Long Island was reorganized and Mr. Canning was advanced to superintendent in charge of freight train operation. On April 1, 1922, he was promoted to the position of superintendent, with duties corresponding to those performed by the assistant general superintendent before that position was abolished.

Dr. J. G. Rutherford, a member of the Board of Railway Commissioners of Canada, who was taken ill recently while in British Columbia, died at his home in Ottawa, Ont., on July 24. Dr. Rutherford was born in Peebleshire, Scotland, December 25, 1857. His education began in Glasgow, where he attended high school before coming to Canada. He was graduated from the Ontario Agricultural College, Guelph, and the Ontario Veterinary College. Appointed veterinary inspector for Manitoba in 1884, Dr. Rutherford continued to act in this capacity for the Manitoba government until 1892. Then he became a member of the Manitoba legislature for Lakeside, which he represented until 1896. In 1897, he was elected to the House of Commons at Ottawa for Macdonald, Man. Dr. Rutherford was appointed Dominion veterinary director-general in 1902, and continued in this office until 1912. During a part of this period he was Dominion live stock commissioner, as well as veterinary director-general. He became superintendent of agriculture and animal industry in the department of natural resources of the Canadian Pacific in 1912, and remained in this position until 1918. He was appointed to the Board of Railway Commissioners in 1918.

On the Tampico Branch of the National Railways of Mexico

Station at Hjerkinn, Dovre Railway, Norway